The Commercial Car Journal

VOLUME XII PHILADELPHIA, DECEMBER 15, 1916 NUMBER 4

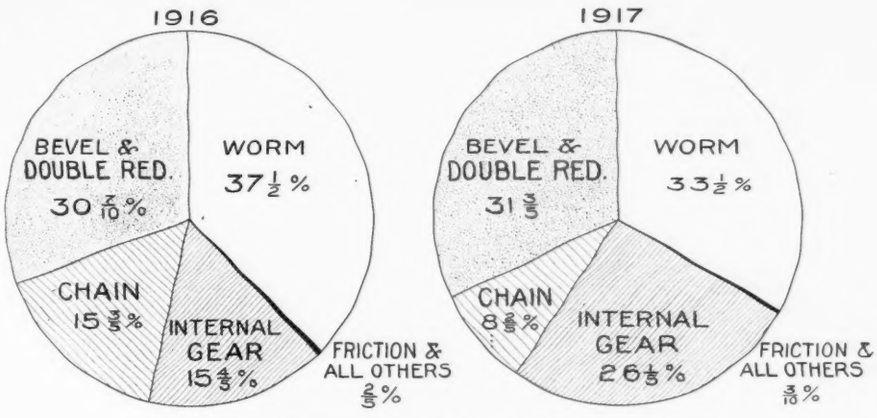
Comparison of 1916 Commercial Production With Estimate for 1917 Shows Tremendous Expansion

Great Gains Shown for Bevel, Internal and Worm Drives. Chain Being Rapidly Eliminated

THE production of gasoline commercial cars for 1916 has exceeded the estimate made early in the year and printed in the March, 1916, C. C. J., by almost 10 per cent., and therefore, although the estimates for 1917 show an unprecedented increase, we believe that the estimates as given below will be reached, if not exceeded, provided, of course, the present era of prosperity continues unabated. Should the European War suddenly cease, it is possible that the halting of business for the necessary rearrangement of trade due to altered conditions will materially alter these figures. We do not believe, however, that the war will end for several years, and therefore fully expect to see the following estimates realized.

By reference to the production table for the past six years it will be noted that the total number of manufacturers is steadily being reduced, and also that there are fewer makers of all sizes except two—indicating that there is a tendency for manufacturers to curtail their lines to as few sizes as possible.

The comparisons of these drives used in the various carrying capacities is enlightening as to the trend in this direction. It seems that the bevel gear and shaft drive virtually monopolizes the very light delivery cars, and that the internal gear drive has acquired a strong preponderance in the medium sizes, whlie the worm drive is making great headway in the larger sizes, and the chain drive is losing ground all along the line.


1916
BEVEL & DOUBLE RED. 30 7/10 %
WORM 37 1/2 %
CHAIN 15 3/5 %
INTERNAL GEAR 15 4/5 %
FRICTION & ALL OTHERS 2/5 %
1917
BEVEL & DOUBLE RED. 31 3/5
WORM 33 1/2 %
CHAIN 8 2/5 %
INTERNAL GEAR 26 1/5 %
FRICTION & ALL OTHERS 3/10 %

Percentage Comparison of Drives, of 1916 and 1917

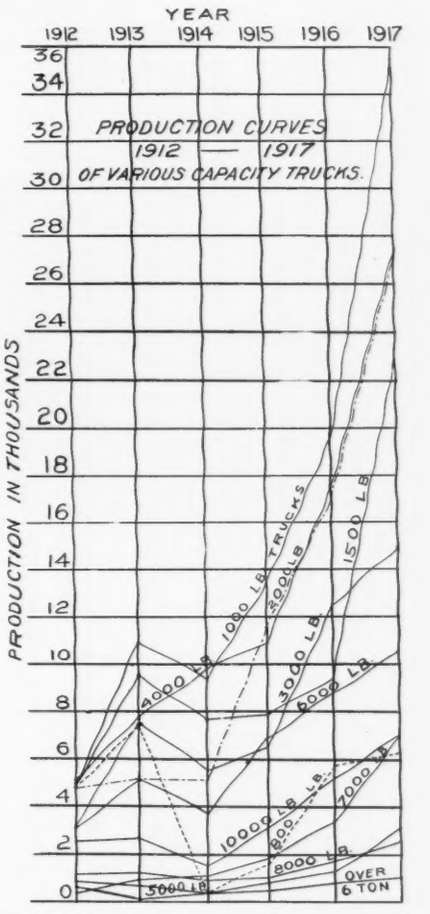


Table Showing Increase by Thousands, of Vehicles of all Capacities

Production of Gasoline Commercial Cars for Six Years

CARRYING CAPACITY	1912		1913		1914		1915		1916		1917	
	Makers	Trucks	Makers	Trucks	Makers	Trucks	Makers	Trucks	Makers	Trucks	Makers	Trucks
500 to 800 lbs.	20	4,506	16	7,492	22	330	31	1,629	10	5,800	8	6,050
½ Ton or 1,000 lbs.	34	4,592	31	10,928	29	9,444	32	13,545	23	18,815	30	35,465
¾ Ton or 1,500 lbs.	59	4,685	46	9,568	39	6,820	38	7,975	48	9,506	38	22,340
1 Ton or 2,000 lbs.	66	5,098	62	7,770	72	8,904	68	10,458	86	17,251	74	26,755
1½ Ton or 3,000 lbs.	39	3,115	46	7,695	63	5,536	59	6,387	80	12,268	67	14,917
2 Ton or 4,000 lbs.	56	3,168	57	5,135	73	5,039	71	11,615	110	17,032	98	27,187
2½ Ton or 5,000 lbs.	5	425	4	60	9	210	11	375	23	1,162	25	2,960
3 Ton or 6,000 lbs.	58	4,865	52	5,675	52	3,887	48	6,884	44	8,279	28	10,500
3½ Ton or 7,000 lbs.	8	276	13	864	18	945	15	1,920	46	3,395	50	6,975
4 Ton or 8,000 lbs.	15	1,072	15	1,116	25	845	24	960	21	1,704	13	2,273
5 Ton or 10,000 lbs.	44	2,212	43	2,604	47	1,581	44	2,995	44	5,149	48	6,843
6 Ton and over	12	687	12	765	16	502	18	545	20	700	17	878
Total	256	34,701	214	59,672	210	44,043	245	65,288	212	101,061	201	163,143

Make your product pay the CCJ is the leader

We cannot refrain from again comparing the development of the commercial car with the earlier years of the pleasure car, as the comparison shows conclusively that the commercial car is coming faster today than the pleasure car did 7 or 8 years ago, when every one connected with the industry thought that it was breaking all records. The figures are as follows:—

Pleasure Cars	Commercial Cars
1904..... 22,830	1912..... 40,500
1905..... 38,000	1913..... 67,000
1906..... 70,000	1914..... 50,288
1907..... 90.000	1915..... 72,183
1908.....110,000	1916.....108,761
1909.....127,287	1917.....170,843

We have added the estimated production of 7,700 electric commercials to the 1916 and 1917 figures.

The many thousand converted Ford cars and other pleasure cars made over into commercial cars are not included in any of these figures as there is no way to obtain any figures as to the number of such cars being produced.

Under 1000 lbs Delivery Cars

	Bevel	All Others	Percentage of Bevel
1916	5350	450	92 3/10
1917	5450	600	90
Decrease in proportion of bevel...			2 3/10

½ Ton or 1000 lb Delivery Cars

	Bevel	All Others	Percentage of Bevel
1916	16505	2310	87 7/10
1917	33670	1795	95
Increase in proportion of Bevel...			7 3/10

¾ Ton or 1500 lb Trucks

	Internal		Bevel		Chain		Worm	
	Cars	% of Total	Cars	% of Total	Cars	% of Total	Cars	% of Total
1917.... 14695	65¾	6290	28½	320	1⅖	1020	4⅖
1916.... 2275	24	4150	43⅖	1106	11¼	1960	20⅗
Increase 12420	41¾	2140					
Decrease			15⅖	786	10⅖	940	16

1 Ton or 2000 lb Trucks

	Internal		Worm		Bevel		Chain	
	Cars	% of Total	Cars	% of Total	Cars	% of Total	Cars	% of Total
1917....16,500	61⅜	8450	31⅜	820	3	985	3¾
1916.....8,737	50⅜	5874	34	1345	7¾	1295	7⅖
Increase 7,763	11	2576					
Decrease			2⅖	525	4⅘	310	3¼

1½ Ton or 3000 lb Trucks

	Internal		Worm		Bevel		Chain	
	Cars	% of Total	Cars	% of Total	Cars	% of Total	Cars	% of Total
1917.....1565	10½	8952	60	2520	16⅘	1880	12⅜
1916..... 395	3⅛	7226	58 9/10	3120	25⅖	1527	12½
Increase 1170	6 3/10	1726	1 1/10			353	1/10
Decrease				600	8½		

2 Ton or 4000 lb Trucks

	Worm		Internal		Chain		Bevel	
	Cars	% of Total	Cars	% of Total	Cars	% of Total	Cars	% of Total
1917....15,660	57⅜	7732	28⅖	1885	6⅘	1910	7 1/10
1916....11,101	65⅛	3784	22⅛	2137	12½	10	1/10
Increase 4,558		3948	6⅛			1900	7
Decrease	7⅜			252	5⅜		

2½ Ton or 5000 lb Cars

	Worm		Chain		Internal	
	Cars	% of Total	Cars	% of Total	Cars	% of Total
1917.....	2320	78⅖	290	9⅘	350	11⅕
1916.....	767	66	395	34		
Increase...	1553	12⅖			350	11⅘
Decrease..			105	24⅕		

3 Ton or 6000 lb Cars

	Worm		Chain		Internal		Bevel	
	Cars	% of Total	Cars	% of Total	Cars	% of Total	Cars	% of Total
1917.....5380	51⅛	3570	34	700	6⅔	850	8⅛
1916.....3292	39 7/10	4192	50⅜	195	2 3/10	600	7⅖
Increase 2088	11½			505	4 3/10	250	⅜
Decrease		622	15⅔				

3½ Ton or 7000 lb Cars

	Worm		Chain		Internal	
	Cars	% of Total	Cars	% of Total	Cars	% of Total
1917.....	5915	84⅘	1050	15	10	1/7
1916.....	2587	76⅕	808	23⅘		
Increase...	2328	8⅗	242		10	1/7
Decrease..				8⅘		

4 Ton or 8000 lb Cars

	Worm		Chain	
	Cars	% of Total	Cars	% of Total
1917	1403	61 7/10	870	38 3/10
1916	1014	59½	690	40½
Increase.....	389	2⅕	180	
Decrease.....				2⅕

5 Ton or 10,000 lb Cars

	Worm		Chain		Internal		Bevel	
	Cars	% of Total	Cars	% of Total	Cars	% of Total	Cars	% of Total
1917.....4288	62⅜	2485	36 3/10	60	9/10	10	1/7
1916.....3151	61⅕	1973	38 1/10	25	1/2		
Increase 1137	1⅛	512		35	⅛	10	1/7
Decrease			2				

6 Ton and Over Cars

	Worm		Chain		Internal	
	Cars	% of Total	Cars	% of Total	Cars	% of Total
1917.....	418	47⅖	385	43⅘	75	8⅘
1916.....	345	49 3/10	310	44 3/10	55	6⅖
Increase...	73		75		20	2⅖
Decrease..		1 9/10		½		

Our next issue will contain The Buyers' Information Commercial Car Review, Eastern Section. This Review will be concluded in our February issue, by the Western Section.

1916

CAPACITY	Worm		Internal		Chain		Bevel		All others	
	Mkrs.	Trucks	Mkrs.	Trucks	Mkrs.	Trucks	Mkrs.	Trucks	Mkrs.	Trucks
Under 1,000 lbs.	...	.....	...	.....	...	.....	9	5,350	1	450
½ Ton or 1,000 lbs...	3	575	1	500	2	1,200	16	16,505	1	35
¾ Ton or 1,500 lbs...	16	1,960	8	2,275	13	1,106	10	4,150	1	15
1 Ton or 2,000 lbs....	45	5,874	21	8,737	16	1,295	4	1,345	...	.....
1½ Ton or 3,000 lbs..	47	7,226	6	395	22	1,527	5	3,120	...	.....
2 Ton or 4,000 lbs....	66	11,101	18	3,784	25	2,137	1	10	...	.....
2½ Ton or 5,000 lbs..	16	767	0	0	7	395	0	0	...	.....
3 Ton or 6,000 lbs. ...	20	3,292	4	195	19	4,192	1	600	...	.....
3½ Ton or 7,000 lbs..	33	2,587	0	0	13	808	0	0	...	.....
4 Ton or 8,000 lbs....	13	1,014	0	0	8	690	0	0	...	.....
5 Ton or 10,000 lbs...	19	3,151	1	25	24	1,973	0	0	...	.....
6 Ton or over.....	9	345	2	55	9	310	...	.....	...	.....
Total.....		37,892		15,966		15,633		31,080		500
Percentage of entire production		37½		15⅛		15⅜		30 7/10		⅛

1917

	Worm		Internal		Chain		Bevel		All others	
	Mkrs.	Trucks	Mkrs.	Trucks	Mkrs.	Trucks	Mkrs.	Trucks	Mkrs.	Trucks
...	.....	...	.....	1	100	6	5,450	1	500
3	760	1	1,000	0	0	25	33,670	1	35
16	1,020	7	14,695	3	320	11	6,290	1	15
42	8,450	20	16,500	8	895	4	820	...	.....
45	8,952	6	1,565	13	1,880	3	2,520	...	.....
65	15,660	15	7,732	15	1,885	3	1,910	...	.....
21	2,320	2	350	2	290	0	0	...	.....
16	5,380	2	700	8	3,570	2	850	...	.....
40	5,915	1	10	9	1,050	0	0	...	.....
8	1,403	0	0	5	870	0	0	...	.....
30	4,288	2	60	15	2,485	1	10	...	.....
8	418	2	75	7	385	...	.....	...	.....
	54,566		42,687		13,730		51,520		550
	33½		26⅛		8⅜		31⅝		⅜

For its readers—information; for its advertisers—results. That's the purpose of the CCJ

MOTOR TRUCK LEGISLATION IN NEW JERSEY AND NEW YORK STIRS BUSINESS MEN AND TRADE

Motor truck legislation pending at the present time in New York State and New Jersey has created considerable stir among truck users, particularly in New York City and in the larger cities of New Jersey. There seems to be a movement on the part of the legislators to increase the tax and restrictions on commercial motor vehicles.

At the first hearing, at Albany, on November 21st, at which Frank M. Baucus, president; Melvin T. Bender, general counsel, and Herbert W. Baker, secretary, of the New York State Automobile Association, were present, it was stated that the present $5 tax was not based on anything definite, but was merely a means of helping an infant industry. Now that the industry has grown and as trucks are claimed to be very destructive to road surfaces, the taxes are to be increased.

Another meeting of the Commission will be held in New York City. The matter has not yet been settled. The new schedule will be filed with the Secretary of State and will go into effect February 1st, 1917. New York truck users are actively approving the measure.

Jersey Drafts Drastic Measures

William L. Dill, Motor Vehicle Commissioner of New Jersey, with his committee of County Highway Engineers, held a hearing at Newark, N. J., on October 2nd and a second hearing November 24th, at which new regulations were proposed, together with a new set of registration fees. These will be considered by the next Legislature and, if passed, will go into effect January 1st, 1918.

Features Covered by the Bill

Briefly, as will be shown by the following extracts, the new regulations will limit the speed, size and carrying capacity of trucks; will preclude the use of metal-rimmed wheels of any kind, will necessitate the use of sealed governors set for certain speed limits and will make compulsory the display of license plates, showing the maximum loads. Owners will be liable for all damage to bridges when carrying loads beyond bridge capacities; pneumatic-tired trucks will be licensed in accordance with pleasure car regulations and vehicles shall be restricted to one trailer, which shall be considered a 4-wheeled vehicle and equipped with rubber tires. The fees proposed are to be based on gross weight, there being an annual fee and a special fee in September. These annual fees run from $15, with a special fee of $7.50 in September for a 4,000 lb. or less capacity truck to $125, with a special fee of $62.50 in September, for the largest vehicles of 27,000 lbs. capacity.

Extracts From Proposed New Jersey Laws

No commercial vehicle or truck shall be more than 96 in. width, outside measurements; in extreme cases the Commissioner of Motor Vehicles shall be privileged to issue permits for the operation of motor vehicles or trucks with a width of load over 96 in., where the weight of the load is not a factor.

That no commercial vehicle or truck shall be equipped with metal tires that may be in contact with the surface of the road, nor shall such vehicle or truck be equipped with any tire which have a partial contact with the surface of the road.

That the height of all commercial vehicles or trucks including load be limited to 12 ft. 2 in.

That all commercial vehicles or trucks shall be equipped with sealed governors or other automatic control, by which the speed shall be regulated, not to exceed the schedule attached hereto.

That the extreme length of motor vehicles or trucks shall not exceed 26 ft. 6 in.

That not more than one trailer or semi-trailer shall be allowed to any commercial vehicle or truck; that in every case said trailer or semi-trailer shall be equipped with rubber tires.

An affidavit at time of registration shall be required from the licensee that the maximum weight in accordance with said plate shall not be exceeded.

That the commercial size of tires used on all commercial vehicles or trucks shall be determined on the maximum width of rubber and in no case shall the width of bearing surface unloaded be less than two-thirds of the commercial size.

That all license fees for four-wheeled trucks shall be based on the maximum wheel load carried on same.

All trailers are four wheel vehicles.

Tractors are motor power vehicles without bodies and shall be licensed on their gross operating weight at the prices fixed in the schedule for gross weight. Size of wheel and tire and rate of speed shall conform to articles 16, 17 and 18 of this report.

Semi-trailers are two-wheel vehicles without motor power and shall be licensed at their carrying capacity at the prices fixed for gross weight. Size of tire and wheel and rate of speed shall conform to articles 16, 17 and 18 of this report.

That trucks, tractors, trailers or semi-trailers equipped with tires smaller than required as per schedule, shall not be licensed.

Loads for rear wheels of motor or motor-drawn vehicles. That one-third of the gross weight of truck and carrying capacity combined must be within the limits of the schedule of the respective diameter of wheel, size of tire and speed in miles per hour, as shown in the schedule hereto attached.

Loads for front axles of motor or motor-drawn vehicles. That the front axle shall carry the balance of the gross weight of truck and load combined and must be within the limits of the schedule of the respective diameter of wheel, size of tire and speed in miles per hour for single tires, as shown by the schedule hereto attached.

All commercial vehicles or trucks equipped with pneumatic tires shall be licensed in accordance with the motor vehicle act governing pleasure vehicles.

GOODYEAR WILL RAISE ITS OWN COTTON

The Goodyear Tire & Rubber Co. has recently purchased 10 acres of land lying 4 miles south of Chandler, Ariz., on the south side of the Salt River Valley, and will begin at once to raise its own cotton. It is estimated that over $500,000 will be expended in sinking wells, erecting cotton gin and cotton seed oil mill for the new plantation. E. W. Hudson, a staple cotton expert, who was sent to the Salt River Valley by the United States Department of Agriculture last year, has resigned that position to superintend the growing of long staple Egyptian cotton on the Goodyear plantation.

PAPERS AT S. A. E. WINTER MEETING

The technical papers to be presented at the one-day (Jan. 11) professional session of the Winter Meeting of the Society of Automobile Engineers will be truly representative of the enlarged activities of the Society. Some of the papers will, of course, relate to automobile engineering, but in addition subjects of interest to aeroplane, tractor and marine engineers will be presented. The Papers Committee, of which K. W. Zimmerschied is chairman, is making the arrangements.

Captain Virginius E. Clark, U. S. A., will present a paper on aeroplanes with special relation to engines. This paper will deal also with the experiences of the Army aviators on the Mexican border and suggest improvements in construction. A well-known engineer will discuss the design of engines for farm tractors. A paper will probably be read on motor trucks, with reference particularly to the proposed military specifications.

Tentative plans have been made to have experts contribute papers on pleasure-car spring-suspension, electrical equipment of gasoline cars, high-speed automobile engines, dynamics of the automobile and crankshaft balancing. It will thus be seen that the papers are of sufficient variety to attract every member of the society. The authors will give brief digests of their papers, thus allowing time for lengthy and adequate discussion of the more important ones.

KNICKERBOCKER MOTOR TRUCK MANUFACTURING COMPANY REORGANIZED

The Knickerbocker Motors, Inc., New York City, has been formed to take over the Knickerbocker Motor Truck Mfg. Co., which has been manufacturing trucks for several years. Herbert G. Streat, founder of the old company, is president of the new one; Arthur C. Brady, formerly president of the Brady-Murray Motor Corp., is vice-president and sales manager; Herbert G. Streat, Jr., treasurer, and Walter C. Guilder, formerly production manager of the Kelly-Springfield Motor Truck Co. and designer of the first Garford and early Macks, and also production man with the Timken-Detroit Axle Co., is production manager. The company will make 2½ and 5½-ton trucks and 3-ton tractors. It is capitalized at $500,000, and will occupy the plant of the old company at 151st & River Ave.

CHASE MOTOR TRUCK CO., Syracuse, N. Y., has announced an increase of $75 in the list price of its Model A 1-ton truck and its Model C 1½-ton truck. This will make the Model A 1-ton truck list at $1725 and the Model C 1½-ton truck list at $2025.

The Model "T" 1500-lb. truck remains the same—namely, $1500. The Model "B" 2½-ton truck at $2475; the Model "X" 3-ton truck at $2800; the Model "O" 3½-ton truck at $3300.

These prices include the chassis in paint and equipped with cab and seat.

Why is the CCJ the only truck paper a member of the Audit Bureau of Circulations? Here's food for thought

S. A. E. TO HAVE MEETING ON JANUARY 11, DURING NEW YORK SHOW WEEK

Thursday, January 11th, will mark the busiest day in the existence of the Society of Automobile Engineers. Although the two preceding days will be devoted to special work of the Standards Committee, the professional session has been condenssed, and the important papers prepared by leading members of the profession have been scheduled to be presented at definite times during the afternoon of January 11th, in the large assembly hall of the Engineering Societies Building at 29 W. 39th St. It is expected that more will be accomplished at this meeting than has hitherto been the case when the professional sessions have been extended over two or three days.

After each paper ample opportunity will be given for a thorough discussion. In order to accomplish this, papers will be distributed to members and only the abstract presented at the session. The professional session, which closes promptly at 4.30, will be followed by the annual dinner in the large banquet hall of the Hotel Biltmore. A reception and "get-together" meeting will be held at 6.30 during the hour preceding the dinner.

The playtime of the session comes at midnight, when the members and their guests will attend, en masse, Ziegfeld's Midnight Frolic on top of the New Amsterdam Theatre. The entire seating capacity for this unique performance has been purchased by the S. A. E. members.

THE FISHER BODY CORPORATION WILL DEFEND RIGHT OF CONVERTIBLE BODY

The Fisher Body Corp., of New York and Detroit, will contest the claims of the Springfield Metal Body Co. in connection with certain alleged patent infringements.

The Fisher Corp. declares that the idea of a body with removable or collapsible sides dates away back to days when carriages were not horseless. It cites the fact that such bodies appeared on European cars more than ten years ago, and frankly scorns any pretensions to design patent validity which might influence it in the least. The Fisher concern maintains eight great plants in Detroit and Walkerville, Ont., employs more than 6,000 men, and for years has supplied many of the largest motor car manufacturers with both open and closed bodies.

PICARD NOW SOLE OWNER OF THE A. J. PICARD COMPANY

A. J. Picard, metropolitan distributor for the U. S. L. batteries and national distributor for the Genemotor, has purchased the interest of E. S. Morrison, in the A. J. Picard Co., and is now sole owner. A 5-story building is being erected at 9 W. 61st St., New York City, which will be ready for occupancy about March 1st.

HESS-BRIGHT NOT CONTROLLED BY OUTSIDERS

To correct misleading rumors and statements, the Hess-Bright Mfg. Co. makes the following statement: A group of bankers, including Frank A. Vanderlip, Philip B. Kirkbride, of New York, and Marcus Wallenburg, of Stockholm, have recently acquired from the American group of stockholders a controlling interest in the shares of the Hess-Bright Mfg. Co. This group of bankers owns also a substantial interest in the S. K. F. Bearing Co., Hartford, Conn. The two companies will be operated quite independently of each other. The former policy will be continued except that its manufacturing facilities will be increased somewhat more rapidly to meet the constantly growing demand for its product. B. D. Gray, who retains his former stock holdings, will continue to manage the business as president. F. E. Bright retires from active participation in the company's affairs, but remains identified with the company as chairman of the board. Aside from these two changes, the organization remains as before. The directors are: F. E. Bright, chairman; B. D. Gray, president of the Hess-Bright Mfg. Co.; Willard Parker Butler, of New York City; Arthur V. Norton, vice-president of the Pennsylvania Co. of Insurance on Lives and Granting Annuities, of Philadelphia; Paul von Gontard, managing director of the Deutsche Waffen-und Munitions Fabriken, Berlin, Germany.

CHANGES IN McQUAY-NORRIS FORCE

L. H. Dally has succeeded H. G. Paro as Chicago manager for the McQuay-Norris Mfg. Co. The Chicago office has been moved from the Michigan Blvd. Bldg. down to Automobile Row at 1140 S. Michigan Blvd. Mr. Dally has been chief of the McQuay-Norris field force of engineers before his transfer to the Chicago office.

H. W. Sweeney has succeeded J. W. McKeen as manager of the Pittsburgh branch office of McQuay-Norris Mfg. Co.

R. W. Long has been transferred from the field force of engineers to manager of the McQuay-Norris Mfg. Co.'s Denver branch office, succeeding H. W. Sweeney.

UNITED MOTORS CORPORATION WELFARE MOVEMENT

The United Motors Corp. is now conducting building operations at several of its plants in the interest of its employees. At Bristol, Conn., the New Departure Mfg. Co. is erecting 102 homes for its employees, and the Remy Electric Co., Anderson, Ind., has broken ground for a building which will be devoted entirely to women employees.

ACCOUNTING SYSTEM FOR DEALERS TO BE CONCLUDED NEXT MONTH

Due to space conditions it was impossible for us to include the last installment of Accounting System for Dealers in this issue of the Commercial Car Journal. The same will appear in the January issue.

CAMPAIGN FOR FIVE HUNDRED OWNER MEMBERS

A campaign was inaugurated at the November meeting to secure 500 motor truck owners as members of the association. Captain O. W. Doolittle and Captain H. C. Adam are the heads of the two teams, into which the association was divided, and a real campaign to interest owners and superintendents of deliveries to become members of the Motor Truck Association was put under way.

A dinner will be given by the losing team to the winning team after the January meeting, and the association is offering a handsome gold watch to the member securing the largest number of applications before the January meeting.

The association went on record as favoring the increase in pay for the members of the Philadelphia Fire Department.

H. C. Adam, of the International Motors Co., reported for his committee which had appeared before a legal committee for the Legislature of New Jersey, to assist in the drawing up of a motor truck bill that is to be presented in the New Jersey Legislature when it convenes.

Quite a lengthy discussion followed Mr. Adam's report on the laws enacted and to be enacted covering the operation of motor trucks in Pennsylvania and nearby States, and it was decided that the association take a more active interest and try to secure the passage of laws that would be advantageous to the motor truck industry.

President, Lee J. Eastman, appointed George O. Simpson, Thomas K. Quirk and D. Walter Harper as a nominating committee to nominate the officers for 1917 and report at the December meeting.

ADAMS DISCONTINUES MANUFACTURE OF TRUCKS

Adams Truck Foundry & Machine Co., W. Main & Cross St., Findlay, O, has discontinued the manufacture of trucks and the general foundry business. The plant will be greatly enlarged and devoted exclusively to the manufacture of axles for pleasure cars and light commercial cars. G. M. Carter, Jackson, Mich., is vice-president and general manager, and F. E. Liddle, formerly superintendent of the Commercial Gear & Mfg. Co., of Jackson, is general superintendent.

METZ IMPROVEMENTS

The Metz Co., Waltham, Mass., is expanding its plant and formulating plans for the social benefit of its employees. A large addition to the factory is being made, while the employees are being remembered with club houses, athletic fields, etc. There is also a gymnasium being planned; a separate baseball diamond, gridiron and half-mile track. A building adjoining the plant is now being converted into an engineers' club. Production has been increased 40 per cent.

Nash Motors Co., Kenosha, Wis., has brought out a log loading truck. This is a 2-ton Jeffery Quad, with 142-in. wheelbase, upon which is mounted the log loading outfit.

Advertising appropriations bring greatest returns when expended in the CCJ

Final Haul to Mt. Wilson Summit Completed Under Great Difficulties

Three Views Illustrating the Difficulties and Dangers Attending the Climb

A SPECTACULAR accident added to the success of the eighth and final trip to the summit of Mt. Wilson with steel for the new telescope, concluding the series of practical demonstrations of motor truck efficiency in heavy hauling with which J. A. Stoner, distributor for Mack and Saurer trucks, has astonished the Southwest.

Stoner had made seven trips carrying huge assembled units of structural steel for the new telescope, which will be the largest in the world, now being erected by the Mt. Wilson Solar Observatory on the summit of the 6000 ft. peak three miles east of Pasadena, Cal. The eighth trip was dreaded by the observatory officials because of the huge size of the piece. The road traces a winding course up the mountain, largely hewn from the side of the gravelly slope, or blasted out of solid rock. Its width is considered ample for 8 ft. loads, but no more. The tube was 13 ft., 6¾ in. wide, and 15 ft. high. The significance of the width is found in the forcing of the wheels out of the regular track, where the crushing strain of the huge load came at the extreme outer edge of the load. The height added to the difficulty on account of the side slope along the grades, and the dipping turns.

The piece was taken up on a 3½ ton Mack. Stoner drove the truck himself on every trip. The risk to life and limb was too heavy to ask a man to assume.

The first 8¾ miles of this last trip was made in safety. The truck showed no signs of heating, though the trail was extremely hot, from the beating rays of the sun which make this mountain side one of the hottest places in Southern California. The rock at the side had to be beaten down by sheer pressure of the load innumerable times. There were at least twenty places where the observatory's 2-ton Mack was coupled on ahead, and both rushed a projecting crag, and crumbled it into the road. Then it was shoveled out, and the big machine continued. This sort of thing tested above all the tires and the steering gear. Stoner held the wheels straight. The front wheels bore 55 per cent. of the load—a necessity under the hauling conditions up the grade. Time after time the pressure of the rock on the inner side of the load scrubbed the front wheels over the gravel until the outer wheel was on the very edge of the precipice.

At 8¾ miles the man on top of the piece, to clear the telephone wires which constantly cross and recross the trail, suddenly gave a leap for life. The rear end was tilting over and back.

Stoner shut off and jumped. The truck and its load came to rest as the rear axle struck the ground. The road had caved down the mountain side under the great weight. Lines were run out almost instantly from the top of the piece. But from 2.55 P. M. until 9.30 the truck was subjected to the twisting stress of the great overload in its tilted position. Then, jacked up on a level, it was carefully inspected, found O. K. and started. At the gate of the observatory reservation there was a bad dipping turn that nearly toppled the whole outfit over. Here a stop was made, the following morning the planks were laid, and the load successfully landed in the observatory. The truck showed not a trace of damage to frame, engine or any other part. Tires, Gibney 5 in. dual rear, came through with so little wear that it was hardly noticeable. One had a chunk gouged out that it would take a nickel's worth of chewing gum to plug, just to show what they had been through.

This trip was made with the engine under governor at 1000 r.p.m. The truck was stock in every respect, with stock overload spring, and lowest stock gear, 13 tooth front sprocket, gear 29.49 to 1, speed 4.04 m.p.h.

Personal Items

J. A. Bulman, formerly with the Federal Motor Truck Co., is now accountant of the Acason Motor Truck Co., Detroit.

D. F. Shanahan, of Covington, Va., has joined the sales force of the Chase Motor Truck Co., as special traveling representative.

Wm. A. Baxter has become general sales manager of the Maxfer Truck & Tractor Co., Chicago. He has been identified with the truck industry for many years.

A. B. MacGowan, formerly in the sales promotion department of the Chase Motor Truck Co., of Syracuse, N. Y., is now city sales manager for that company at the Philadelphia branch.

S. R. Scott has become district sales representative of the Denmo truck. He has been associated with the White Co., and more recently with the Warner-Swasey Co., as assistant works manager.

Chas. N. Gillette, formerly southern division manager of the Chase Motor Truck Co., of Syracuse, N. Y., has resigned to assume the same position with the Selden Truck Sales Co., of Rochester, N. Y.

Geo. S. Holvey, who has been conducting business as the Holvey Motor Truck Sales Co., in Rochester, N. Y., has become city sales manager of the Selden Motor Truck Sales Co., of Rochester, and will have charge of the local branch.

Wm. B. Stout has been appointed manager of the Aircraft Division of the Packard Motor Car Co. He was formerly general sales and advertising manager of the Scripps-Booth Corp., where he is succeeded by W. I. Brown, who was his assistant.

B. N. Jones, formerly in charge of the industrial department of the Otis Elevator Co., has been appointed manager of the Harrison, N. J., plant. Mr. Jones is a member of the S. A. E., the A. S. M. E., and the A. I. E. E. He has been connected with the Otis Elevator Co. in various capacities for the past 18 years, and when the manufacture of worm drive axles and steel wheels was decided upon as a standard product of the Buffalo works, he was placed in charge of the industrial department to manage this branch of the business.

C. L. DuPuy, for the past five years representing the Selden line of motor trucks in Atlanta, Ga., has become southern sales manager with territory comprising Georgia, Florida, Alabama, Mississippi and Louisiana. His headquarters will be in Atlanta.

Chas. E. Collard, formerly Philadelphia branch manager of the Chase Motor Truck Co., of Syracuse, N. Y., has resigned that position to become division sales manager of the Philadelphia territory of the Selden Truck Sales Co., of Rochester, N. Y.

Fred E. Boylan has resigned as manager of the Detroit branch of the Swinehart Tire & Rubber Co., and has been appointed factory representative of the Sewell Cushion Wheel Co. With a view of working the territory more intensively, Mr. Boylan will divide his time with branches in Cleveland, Buffalo, Rochester, Boston, New York, Philadelphia, Baltimore, Pittsburgh, Cincinnati, St. Louis, Chicago and Minneapolis.

New Truck Agencies

Butler-Veitch Co., 2532 Shattuck Ave., Berkeley, Cal., is now distributor of the Denmo trucks in that vicinity.

Denmo Sales Co., St. Louis, Mo., distributors of the Denmo truck, has opened show and sales rooms at 2638 Locust St.

A. J. Field, Davenport, Wash., sold his garage to B. F. Latham. The new management will handle Buick pleasure cars and G. M. C. commercial cars.

Republic Motor Truck Co., Alma, Mich., has opened a branch at 1702 Michigan Ave., Chicago, succeeding Eugene Goldman, the former dealer in that city. The branch will be known as the Chicago Republic Truck Co. W. C. Vliet will be in charge of the wholesale sales and W. E. Kenyon in charge of retail sales in the city.

Stewart Motor Sales Co., 103 S. Front St., Columbus, O., has the agency for the Stewart trucks in Columbus and Central Ohio

Zaetsch, Wm. A., 1004 Atwater St., Saginaw, Mich., has taken the agency for the Menominee truck.

Herschell-Spillman Co., No. Tonawanda, N. Y., manufacturer of automobile and marine gasoline engines, has increased its capital from $250,000 to $750,000. This will be used to provide facilities to take care of the heavy increases in business during the past year.

Removals and Trade Changes

Ford Clark Co., manufacturer of case hardened and ground automobile machine parts, has removed to 3125 Perkins St., Cleveland, O., where it will be able to double its production capacity.

Globe Motor Truck & Body Co., of Northville, Mich., has changed its name to the Ypsilanti Motor Truck Co., of Ypsilanti, with a capital stock of $100,000. A new factory will be erected for the manufacture of commercial cars and commercial car bodies. The directors are H. R. Scovil, Chas. N. Haviland, D. L. Davis, F. W. Paton, Frank R. Welch, H. F. Shaefer and G. E. Porter. G. E. Porter will have charge of the manufacture and production end of the organization. F. M. Woodward, of Plymouth, formerly connected with the Elder Motor Car Co., will have charge of sales.

Factory News

Marvel Accessories Mfg. Co., Cleveland, O., has increased its capital to $100,000. A new large building is now being constructed which will greatly enlarge the manufacturing facilities, and when completed, it will add 45,000 sq. ft. of working space. The latest and most efficient machinery will be installed.

Champion Motors Co., manufacturer of the Champion light delivery car, has located on the Lincoln Highway, at Fulton, Ill., opposite Clinton, Ia. It is capitalized at $5,000,000 and is officered by H. L. Wildar, president; N. R. Wildman, vice-president; H. D. W. Mackaye, vice-president in charge of production; Wm. Greif, secretary and treasurer. The company will include in its line 1000-lb. and 1500 lb. light delivery cars and taxicabs. These cars will sell at from $750 to $775.

It has been reported in Cleveland that a new company is being formed to take over the business of the Hydraulic Pressed Steel Co., and the Cleveland Welding & Mfg. Co., with additional capital for the purpose of enlarging the plants. The Cleveland Welding & Mfg. Co. will manufacture the Parker rims, the patent for which was issued in July. It is claimed these rims do not in any manner infringe the Perlman or any other patents.

GEORGE M. DAVIS

Recently appointed sales manager of Commercial Car Unit Co., of Philadelphia, well-known manufacturers of the Hudford unit for converting Ford cars into trucks. Mr. Davis was sales manager of the Lippard-Stewart.

LYNN B. DUDLEY

Just appointed advertising manager of the Federal Motor Truck Company, of Detroit, to succeed George W. Cushing.

HERBERT CHASE

Formerly laboratory and chief engineer of the A. C. A., has joined the office staff of the S. A. E., as assistant secretary.

WALTER WOODS

Vice president of the newly organized Van Cortlandt Vehicle Corporation, Sixty-third and Broadway, New York City, which was established to handle Peerless pleasure and commercial cars in New York City and vicinity.

The CHILTON ideal—honest circulation; results to advertisers—fully exemplified in the CCJ

THE COMMERCIAL CAR JOURNAL

Entered as second-class matter at the Post Office at Philadelphia, Pa. under the act of March 3, 1879

Vol. XII. PHILADELPHIA, DECEMBER 15, 1916 No. 4

Published the 15th of each month by the

CHILTON COMPANY

Market and 49th Streets Philadelphia, U. S. A.

JAMES ARTMAN, President C. A. MUSSELMAN, Treas. and Gen'l Mgr.
GEO. H. BUZBY, Vice President A. H. VAUX, Secretary

ADVERTISING DEPARTMENT

Eastern Mgr., C. MONROE SMITH, New York Western Mgr., C. C. McKINNEY, Chicago

EDITORIAL DEPARTMENT

JAMES ARTMAN, Editor-in-Chief
E. S. FOLJAMBE, Managing Editor
ALBERT G. METZ, Ass't Managing Editor

SUBSCRIPTION RATES

United States and Mexico .....One Year, $1.00
Other Countries in Postal Union, including Canada .....One Year, $2.00
Make Checks, Money Orders, etc., payable to Chilton Company
Change of Address—Subscribers desiring their address changed, should give the old as well as the new

The Commercial Car Journal is a Member of the Audit Bureau of Circulations

UNTIDINESS CAUSE OF FIRES

THE fire loss in the United States is estimated in the neighborhood of twenty-five thousand dollars a day. This appalling loss is largely preventable. Untidiness is unquestionably one of the prime factors causing this tremendous waste of property.

The fire loss of automobiles is increasing each year; this includes commercial cars. Untidiness in the garage just as in the home is the principal cause.

Many business firms provide most unsuitable accommodations especially for their first commercial car. Conditions are anything but conducive to a lowering of the fire hazard. Accumulations of oily waste are thrown carelessly into a corner with no thought or even knowledge of the fact that spontaneous combustion is a reality. Wooden floors instead of cement are not unusual, and these, when oil-soaked, make unusually good kindling for a large conflagration.

Cleanliness should be insisted upon by every truck owner whether he be merely an owner of an individual truck, a dealer or garage man housing many, or a big fleet user. Dealers and garage men especially should set the example. Not only will the fire hazard be reduced to a minimum but the efficiency of the workmen and of the entire establishment will be increased.

SKIDDING AND HOW TO PREVENT IT

AT this season of the year much damage is done by the truck driver who does not appreciate what skidding is and how to prevent it. The writer has observed more than one truck crash into a post and completely demolish the front end, twisting the frame, ruining the radiator, and even damaging the engine; all due to lack of knowledge on the part of the driver.

Skidding is a term applied to side slipping or motion of the rear end of the vehicle. It really includes a forward motion of the vehicle with the wheels sliding, due to the brakes. On extremely slippery pavements, due to ice or wet asphalt, or other slightly muddy surfaces, a too sudden application of power will cause the wheels to spin and, due to the differential action, one wheel will spin faster than the other. The result is a side pulling effect, which swings the rear of the vehicle around. The remedy for such a skid is two-fold—instantly release the clutch or cut down the speed of the engine, and at the same time turn the front wheels in the direction in which the rear of the vehicle is skidding.

Skidding Due to Locked Wheels

THE most common and dangerous form of skid, however, is due to a sudden application of the brakes when on a slippery surface. In this case it is assumed that the clutch is already disengaged, and the wheels, being locked, slide. If the surface of the road is crowned and the vehicle is on the right side, it naturally skids to the right. Slightly releasing the brakes and steering in the direction in which the skid occurs will check it. Unfortunately an emergency stop is nearly always the cause of this form of skidding, and if the truck is not stopped it is apt to hit the obstruction. If room permits turn the front wheels opposite the direction of the skid and turn the vehicle completely around.

Drive Slowly

A skid due to applying the brakes when there are no anti-skid devices on cannot be avoided if driving rapidly and a sudden stop is to be made. This is the kind of skid that is most dangerous. The skid due to too great application of power to the rear wheels does not usually result disastrously. Therefore, as the winter weather comes on and the pavements become treacherously slippery, it behooves the careful driver to put on his anti-skid devices and avoid fast driving.

HOW THE MANUFACTURER CAN CO-OPERATE TO ASSIST RETAIL SALES

THE assistance which the dealer receives from the truck manufacturer is greatly appreciated; in fact, in some cases, agencies have been taken because the manufacturer had the reputation of backing up and giving valuable assistance to his dealers.

This takes the form of shouldering some and occasionally all of the advertising expense, or at least in supplying suitable copy and cuts to assist in local advertising.

At other times it has cropped out as a school conducted at the factory, where free instruction is given to anybody connected with the retail sales establishments.

Another form of assistance is that of providing the dealer with well written pamphlets or booklets on the subject of haulage, this literature to be distributed by the dealer in working up prospects. In many ways the manufacturer can co-operate with the men representing him and this co-operation is extremely important.

Everybody who is anybody in the truck industry reads the CCJ

Metal and Rubber Markets

Steel Prices Still Going Up

A review of the metal markets since our last writing reveals the fact that domestic ship-building interests are draining the mills for ship plates, the higher prices even not diverting buyers from their determination to take tonnage for delivery in the last half of next year. An advance of $5 a ton was levied by the mills on rails with the view of curbing the demand for rail tonnage. The effect, however, has just been the opposite from that desired. The Allies have covered their shell steel requirements over the last half of next year by placing an order for 1,000,000 tons of shell steel. Quotations on December 10th were:

Steel Products Prices

Bessemer billets, per ton, mill	55 00	a ....
Open hearth, per ton, mill	55 00	a ....
Sheet bars, per ton	55 00	a ....
Forging billets, per ton, mill	80 00	a ....

Sheets

The following prices are for 100-bundle lots and over f.o.b. mill; smaller lots are $2 per ton higher:

Blue Annealed Sheets—	Cents per lb.	
Nos. 9 to 12	3.40	a 3.65
Nos. 13 and 14	3.50	a 3.75
Nos. 15 and 16	3.55	a 3.80
Box Annealed Sheets, Cold Rolled—		
Nos. 17 to 21	3.80	a 4.05
Nos. 22 and 24	3.85	a 4.10
Nos. 25 and 26	3.90	a 4.15
Galvanized Sheets of Black Sheet Gauge—		
Nos. 10 and 11	4.50	a 5.00
Nos. 12 to 14	4.60	a 5.10
Nos. 15 and 16	4.75	a 5.25
Nos. 17 to 21	4.90	a 5.40
Nos. 22 and 24	5.05	a 5.55
Nos. 25 and 26	5.20	a 5.70

Above prices are for Bessemer stock. For open hearth stock $2 per ton advance is charged.

Iron and Steel at Pittsburgh

Bessemer iron, Valley furnace	33 00	a35 00
Bessemer steel, f.o.b. Pittsburg	55 00	a ....
Skelp, grooved steel	2 85	a 3 00
Sheared steel skelp	3 00	a 3 10
Skelp, grooved iron	2 70	a 2 80
Sheared iron skelp	3 00	a 3 10
Ferromanganese (80 per cent.), seaboard	162 00	a165 00
Steel, melting scrap	26 00	a27 00
Steel bars (contracts)	3 00	a ....
Black sheets, 28-gauge	4 00	a 4 25
Galvanized sheets, 28-gauge	5 50	a 6 00
Tank plates, ¾ and heavier	4 25	a ....

Prices of New Metals

Demand for copper and brass continues heavy. Makers are well sold up over the greater part of next year. The following prices are all f.o.b. mill. The high and low prices bid between the period of November 8th to December 10th are given herewith.

	High	Low
Sheet zinc	21 00	17 00
Sheet aluminum, 1917 contract	40 00	40 00
Sheet aluminum, outside market, prompt shipment	75 00	65 00
Copper wire	39 00	32 50
Sheet copper, hot rolled	42 00	37 50
Sheet copper, cold rolled	43 00	38 50
High brass sheet, wire and rods	41 00	38 50
Low brass sheet, wire and rods	42 00	41 00
Bronze sheet and wire	43 25	40 00
Brazed brass tubing	46 00	45 00
Brazed bronze tubing	48 00	47 00
Seamless copper tubing	46 00	43 50
Seamless brass tubing	45 00	42 50
Seamless bronze tubing	46 00	43 50
Full lead sheets	9 25	9 00
Cut lead sheets	9 50	9 25

Prices of Old Metals

The market holds very strong at the recently advanced prices, with dealers reporting an active demand. Lead scrap is especially active and tending higher. Prices on December 10th were:

	Cents per pound			
Copper—	Buying.		Selling.	
Heavy cut and crucible	28.00	a29.00	31.00	a32.00
Heavy and wire	27.00	a28.00	30.50	a31.00
Light and bottoms	23.50	a24.00	25.50	a26.00
Heavy machinery comp.	21.50	a22.00	23.50	a24.00
Brass, heavy	15.00	a16.00	17.00	a18.00
Brass, light	12.25	a12.50	13.00	a14.00
No. 1 clean brass turnings	16.50	a17.50	19.50	a20.50
No. 1 comp turnings	18.00	a19.00	20.50	a21.00
Lead, heavy	6.87½a	7.00	7.25	a 7.37½
Tea lead	6.12½a	6.25	6.37½a	6.50
Zinc scrap	8.50	a 9.00	9.75	a10.00

The buying prices are those which the larger dealers will pay; the selling prices are market.

Ceylon Rubber Advances

A noticeable advance has been made in Ceylon rubber since our last report, having gone from 68 to 84 for first latex, pale crepe. Centrals also showed an increase. Para has been showing little activity. The prices quoted below are the highest and lowest bid during the period from November 8th to December 10th:

	High	Low
Para—Up-river, fine, per lb.	82	80
Up-river, coarse	56	45½
Island, fine	72	71
Island, coarse	31½	30
Caucho, ball, upper	52	46
Caucho, ball, lower	49	44
Cameta	33	32
Ceylon—First latex, pale crepe	84	66
Brown, crepe	79	61
Smoked sheets	84	65½
Centrals—Corinto	52	46
Esmeralda	52	46
Guayule	36	32
Balata, sheets	74	70
Balata, black	65	62
Mexican—Scrap	48	45
Frontera	49	45
African, Massai, red	58	50

Domestic Scrap Rubber

Tires—Automobile	6¼
Bicycles, pneumatic	4
Inner tubes, No. 1	24
Inner tubes, No. 2	10½
Red	10½

FIFTY-ONE TRUCKS EXHIBITED AT LOS ANGELES SHOW

During the Los Angeles Automobile Show, in connection with which there was a special show of motor trucks, it was claimed that Los Angeles now stands third among American cities in number of trucks in use, following only New York and Chicago. Nearly every dealer in the city exhibited at the show, and the space set aside, though large, proved inadequate to satisfy the demand. The largest exhibit in point of number was of Harold L. Arnold, who showed seven styles of Vim delivery and special service bodies. Body work was shown in a larger number of exhibits than in any previous year, and several exhibits featured photographs illustrating trucks in numerous varieties of business and service.

Dealers and trucks exhibiting were:

Mack Motor Truck Co., Mack trucks and tractor, Saurer truck; Smith Bros., Peerless; Earle C. Anthony, Packard and Reo; Pacific Kissel Kar Branch, Kissel, Federal and Briscoe; Olds, Banta & Smith, Standard and M. & W. truck attachments; Aston Motor Car Co., Pullman; Pioneer Commercial Auto Co., White; Moreland Motor Truck Co., Moreland; Hartwell Motor Co., Jeffery; John Lee, Commerce; John A. Ewin, Warner trailer; Los Angeles Trailer Co., Utility trailers; Woodward Truck Attachment Co., Ton-Ford attachment and 4-speed transmission for Fords; William E. Bush, Pierce-Arrow; Kimball Truck Co., Kimball; D. F. Poyer, Republic; H. G. Pendell, Denby; Studebaker Branch, Studebaker; Harold L. Arnold, Vim.

A total of 51 vehicles were exhibited.

NASH MOTORS CO., successors to the Thos. B. Jeffery Co., Kenosha, Wis., reports that November was the biggest sales month in the history of the plant, business during the thirty days of that month showing an actual increase of 381 per cent. over the business done in the corresponding month of last year.

NEW YORK FIRE COMMISSIONER RECOMMENDS DOING AWAY WITH ALL FIRE HORSES

Fire Commissioner Robert Adamson has made a request to the Board of Estimate and Apportionment for $1,066,112.75 for motor equipment to replace the 720 remaining horses. He strongly urges that the motorization be completed by a single appropriation rather than by installation. He states that this plan would replace the old and obsolete apparatus with new and up-to-date equipment, enormously increase the efficiency of the department, render unnecessary the establishment of new companies and result in the saving of at least $150,000 a year in reduced cost of operation of motorized fire companies.

HURLBURT MOTOR TRUCK CO., 3rd Ave. & Harlem River, New York City, plans to put on the market, beginning January 1st, a new 1-ton truck. It is expected to turn out about 5000 of these a year.

Plenty of the right kind of circulation means quantity results to advertisers in the CCJ

Parts and Units for Commercial Cars of Six Hundred Pound to One Ton Capacities

We wish to call attention to the following pages, which contain diagrams, exterior views, and specifications of engines, axles, transmissions, bodies and other parts which are suitable for use in light delivery cars and trucks up to one-ton capacity. This section is dedicated to those who are desirous of manufacturing a truck of the above-mentioned capacity. Although we have not been able to get details from all manufacturers, we believe the material herewith submitted will prove helpful.

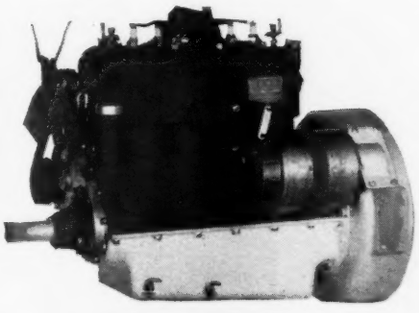
LE ROI ENGINE.

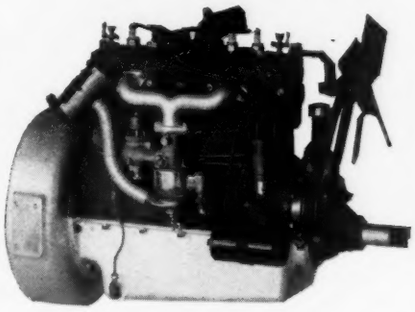
Made by the Milwaukee Machine Tool Co., Milwaukee, Wis.

The principal dimensions of this engine are given on the accompanying diagrams. The makers furnish this engine in stripped condition, consisting of fan, fan belt, priming cups, starting crank with ferrule handle, No. 4, S. A. E. standard bell housing for unit power plant and ball bearing for transmission drive shaft. Lubrication system is combination of pump and splash. The timing gears are helical; cooling, thermo-syphon. The builders recommend the following equipment for their engine and can furnish the engine complete ready to set into the chassis with the exception of the transmission: Connecticut ignition; J-D conical spark plugs; Schebler carburetor; Allis-Chalmers motor generator. The makers supply a governor of their own make. The make of the magneto or transmission is optional.

For a snappy proposition with satisfactory power under all conditions the makers recommend about 550 lbs. total weight for each rear axle reduction, figured on a basis of wheels being 32 in. dia., this to apply to any kind of service. This must take into account the weight of passengers and load as well as dead weight of the truck.

The stripped engine weighs 275 lbs., or about 10 lbs. per b.h.p. The weight of the engine fully equipped, including starter, is 340 lbs.





Left and Right-Side Views of the Le Roi Model C, 3⅛ x 4½ in. Engine

BUDA ENGINES—FOR 1-TON TRUCKS.

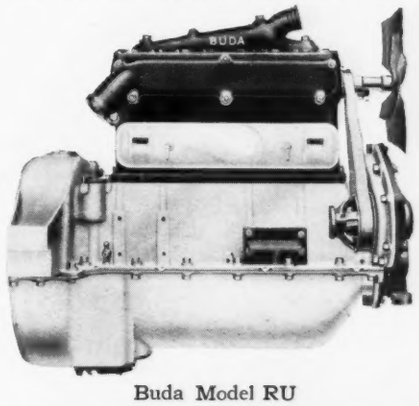
Made by the Buda Co., Harvey, Ill.

Buda Engine—Model R—3½ in. x 5⅛ in.

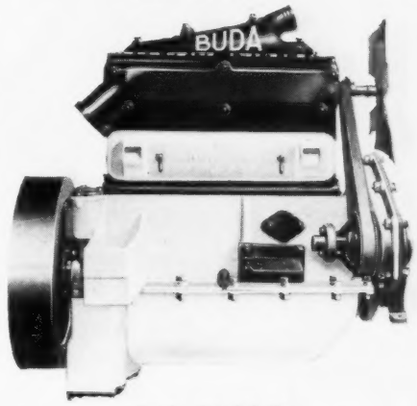
Specifications and dimensions are as follows:

Four-cylinder, vertical, en bloc, "L" head type, four cycle; bore, 3½; stroke, 5⅛; weight, aluminum, 445 lbs.; cast iron, 505 lbs.; 3-point suspension; 1¼ in. side outlet carburetor; positive pump system with constant oil level lubrication; cooling, thermo-syphon regularly, or centrifugal water pump at additional charge.

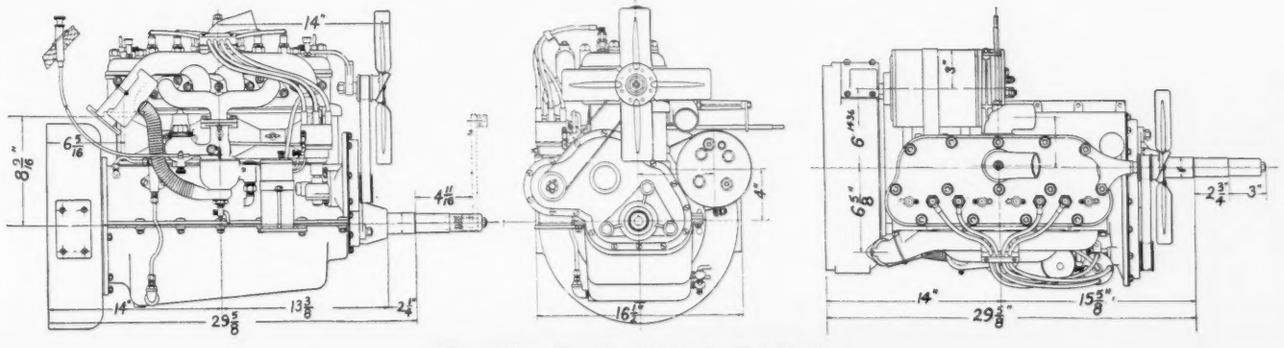
	Inches
Extreme length of crankshaft	32
Height from center of crankshaft to top of water outlet pipe	22¾
Distance from center of crankshaft to bottom of motor	9¼
Distance from center of front supporting bracket to center of rear supporting arm	23½
Drop of supporting arms from center of crankshaft to top of frame	4 to 6
Drop of front support bracket	2½ or 3½
Length of rear supporting arm	26
Length of motor over cylinders	19⅝
Length from face of fan to rear of cylinders	25 9-16
Diameter of flywheel	15¾
Face of flywheel	3½
Fitted for cone clutch, 14 in. largest diameter, 12½ deg. angle	
Depth of flywheel, cone side	3⅛
Diameter and length of crankshaft beyond flywheel,	
1.373 x 1½ in. tapped on end ⅞ in. 9 threads	
Diameter and length of front bearing,	1¾x2⅞
Diameter and length of middle bearing	2x2¼



Buda Model RU



Buda Model R



Dimension Details of the Le Roi Engine

Diameter and length of rear bearing 2⅛x3¼
Diameter and length of connecting-rod bearings 1⅞x2
Effective working diameter of valves .. 1½
Use ⅞ in. 18-standard thread, S. A. E. spark plugs.
Piston displacement in cubic in. 197.20
Provision is made for attaching most of the standard ignition, starting and lighting devices.

Buda Engine—Model "W"—3¾ in. x 5⅛ in.

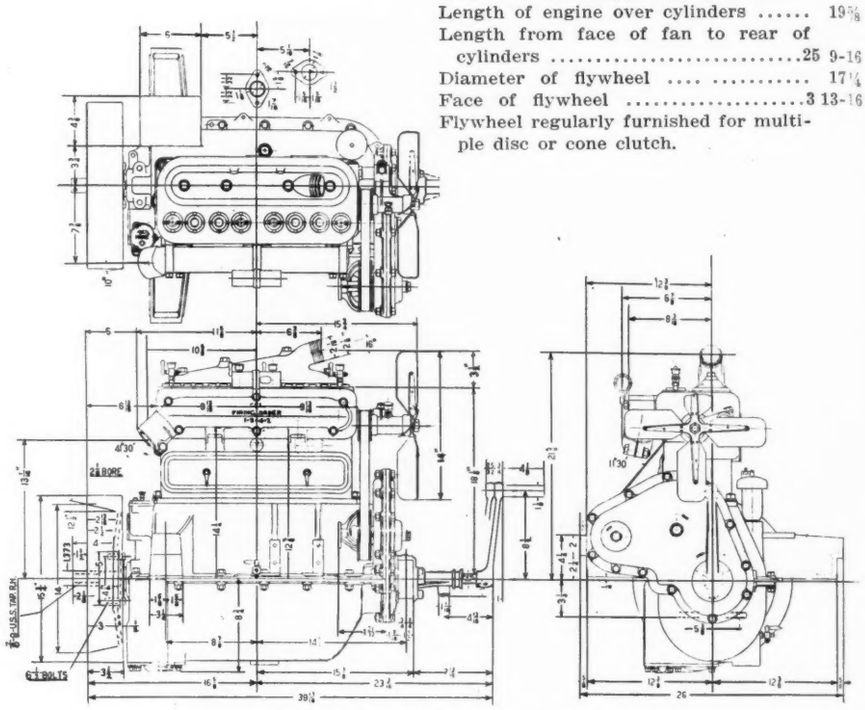
The specifications of this model are the same as the model R with the exception of the bore.

Buda Engine—Model RU—3½ x 5⅛ in.

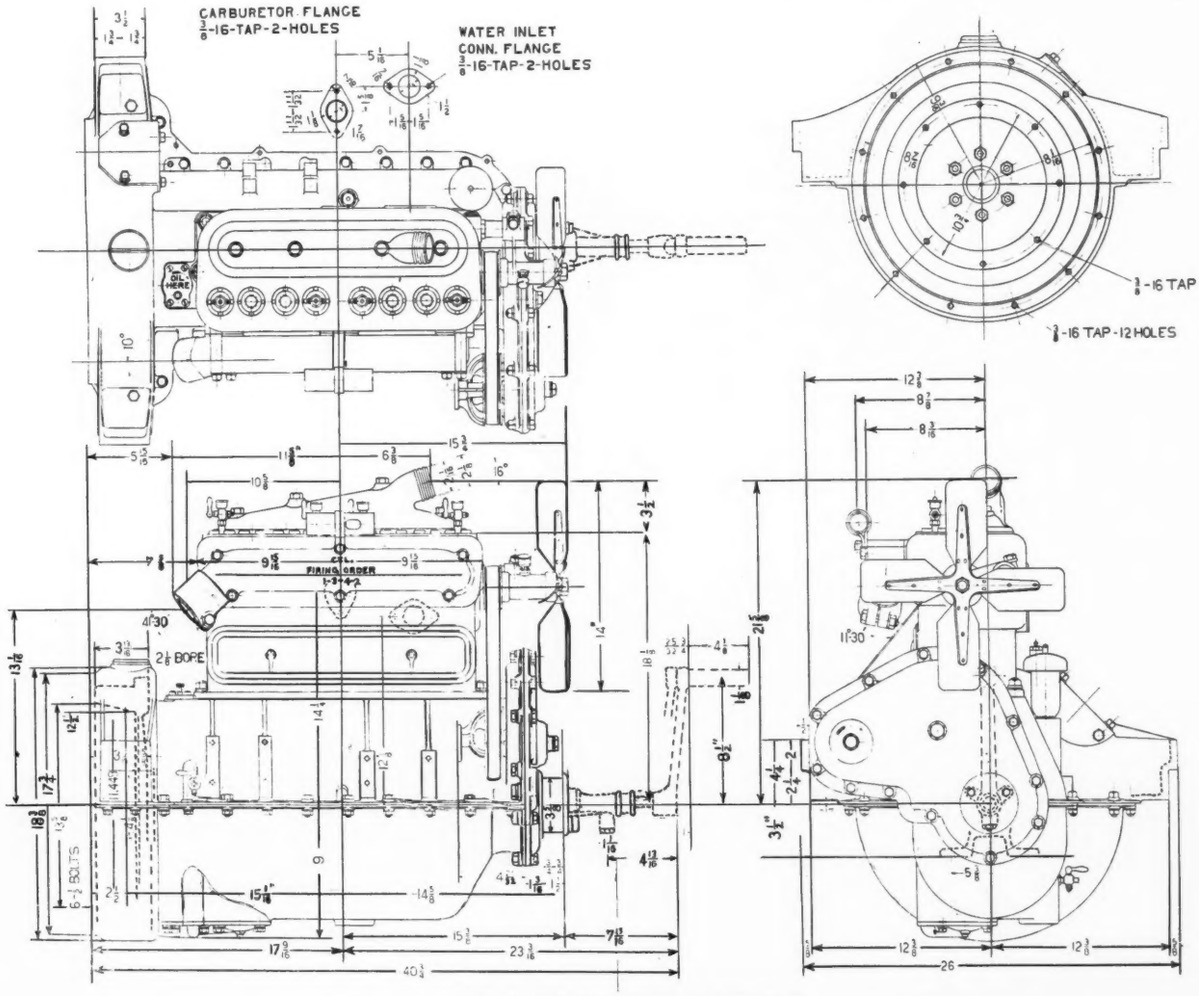
Specifications of this model are as follows:

Type—Four-cylinder, vertical, en bloc, "L" head type, four cycle; bore, 3½ in.; stroke, 5⅛ in.; weight, aluminum, 490 lbs.; cast iron, 615 lbs.; 3-point suspension; any standard type of magneto or ignition system; 1¼-in. side outlet carburetor; positive pump system with constant oil level lubrication; thermo-syphon regularly, or centrifugal water pump at additional charge; steel fan, belt tension adjustment.

	Inches
Extreme length of crankshaft	27½
Height from center of crankshaft to top of water outlet pipe.....	22¾
Distance from center of crankshaft to bottom of motor	9¼
Distance from center of front supporting bracket to center of rear supporting arm	29¾
Drop of supporting arms from center of crankshaft to top of frame .....4 to 6	
Drop of front support bracket .....2½ or 3½	
Length of rear supporting arm.....	26
Length of engine over cylinders	19⅝
Length from face of fan to rear of cylinders 25 9-16	
Diameter of flywheel	17¼
Face of flywheel 3 13-16	
Flywheel regularly furnished for multiple disc or cone clutch.	



Buda Model R Engine—3½" x 5⅛"



Buda Model WU-R—3½" x 5⅛"

Diameter and length of front bearing, 1¾x2⅞
Diameter and length of middle bearing.2x2¼
Diameter and length of rear bearing..2⅛x3¼
Diameter and length of connecting-rod bearings 1⅞x2
Effective working diameter of valves 1½
Use ⅞-in. 18-standard thread, S. A. E. spark plugs.
Piston displacement in cubic inches.. 197.20
Internal diameter of bell housing flange 16⅛
External diameter of bell housing flange 17¾
Diameter of bolt circle 16⅞
Diameter of bolts ..... ⅜

Note—This motor will be furnished without the unit feature, if desired.

Buda Engine—Model WU—3¾ in. x 5⅛ in.

Same specifications as for the Model RU—with the exception of the bore.

G. B. & S. ENGINES.

Made by the Golden, Belknap & Swartz Co., Detroit, Mich.

G. B. & S. Model P. M. 31. For 1-ton trucks.

Specifications: Four cylinder, 4 cycle; L-head cylinders, cast en bloc; thermo-syphon cooling; 3¾ in. bore, 4½ in. stroke; 22½ h.p. S. A. E. rating, 1000 ft. piston speed; 36.9 h.p. at 2800 r.p.m. on actual brake test; crankshaft front bearing, 1½ in. x 3⅞ in.; crankshaft center bearing, 1⅝ in. x 2¼ in.; crankshaft rear bearing, 1⅝ in. x 4 in.; connecting-rod bearings, 1½ in. x 2 in.

Over all length of power plant:

Using Detroit Gear & Machine Co.'s transmission, 49 9-64 in. Using Grant-Lees Gear Co.'s model K transmission, 47 in.

Detroit Gear & Machine Co.'s transmission drive shaft is 1⅛ in. square by 1⅜ in. long, with nut to lock universal joint. This shaft is of high carbon steel. The Grant-Lees Gear Co.'s drive shaft is 13-16 in. square by 1¼ in. long, with nut to lock universal joint. Shaft is made of 3½ per cent. nickel steel and is guaranteed by the builder to handle cars up to 2500 lbs. in weight.

Both transmissions have center control, emergency brake lever, and foot pedals, and can be used for either right or left-hand drive.

Distance from center of holes in front support to center of holes in rear support, 28 59-64 in.

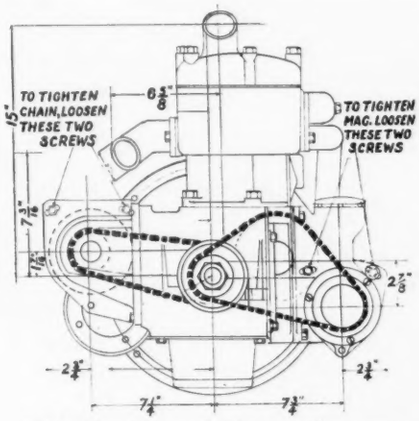
Distance from center of rear support to front end of square of drive shaft, where front end of universal joint shoulders on drive shaft:

Using Detroit gear model DE transmission, 14 3-32 in.

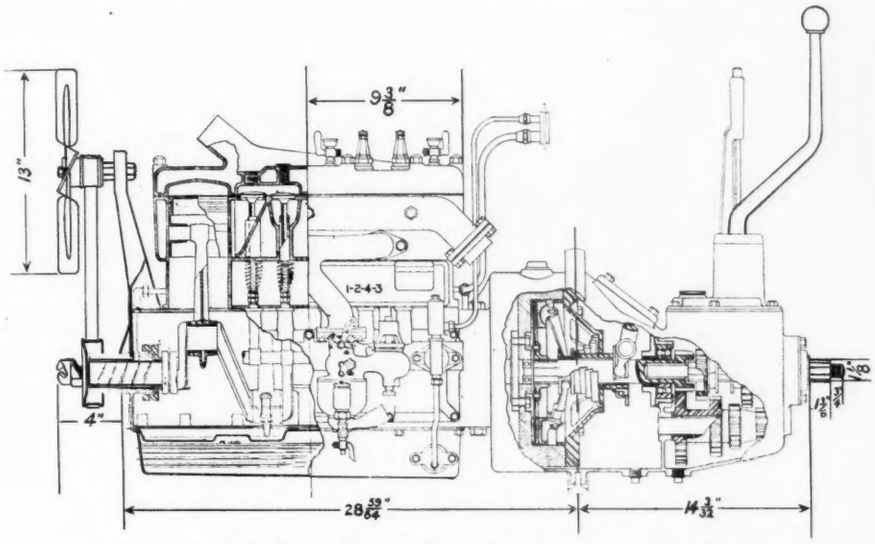
Using Grant-Lees model K transmission, 12 3-16 in.

The hangers are supplied in two standard widths from finish to finish—26¼ in. and 23½ in. Approximate weight of complete power plant, having cast iron crankcase and transmission case is 450 lbs.; G. B. & S. single steel drive plate clutch.

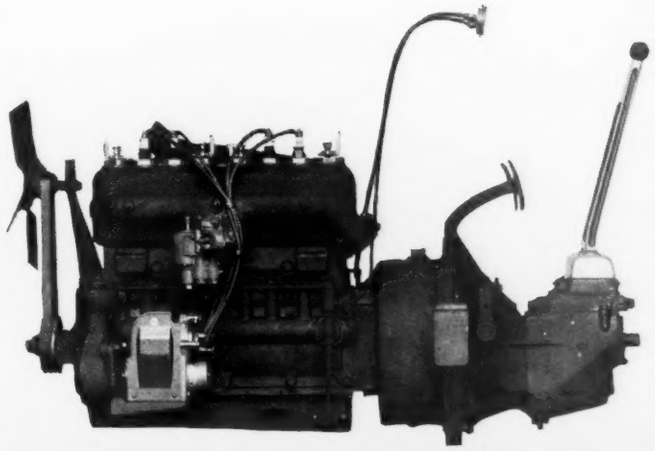
Engine is so arranged as to make it adaptable to several of the standard and well-known electric lighting and starting equipments.



Note Simplicity of Chain Adjustment



Showing Main Dimensions of G. B. & S. Model P. M. 31 Engine

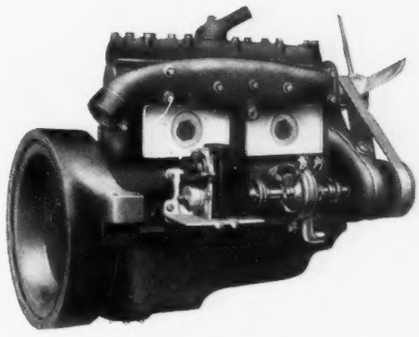


G. B. & S. Model P. M. 31 Engine

WAUKESHA ENGINE.

Made by the Waukesha Motor Co., Waukesha, Wis.

Waukesha ¾ to 1½-ton Engine—Model T-U-4.



Waukesha ¾ to 1½-Ton—Model T-U-4 Engine

Engine has bore, 3½ in.; stroke, 5¼ in.; piston displacement, 202 cu. in.; rated h.p., 19.60; valves 1¾ in. dia.; three main bearings; helical timing gears; three piston rings; crankcase cast integral with cylinders; pump or Thermo-syphon cooling; connecting-rod bearing, 2 x 3¼ in.; front main bearing, 2 x 2¼ in.; center bearing, 2 x 2½ in.; rear bearing, 2 x 3 in.; piston pin bearing, 1 x 2 in.; camshaft diameter 1¼ in.; supporting arm, standard drop, 2¼ in.; standard width, 23⅛ in.; crankshaft rear end, 1¼ in., standard diam.; standard intake 1 in.

EMPIRE 1-TON REAR AXLE.

Made by the Empire Axle Co., Dunkirk, N. Y.

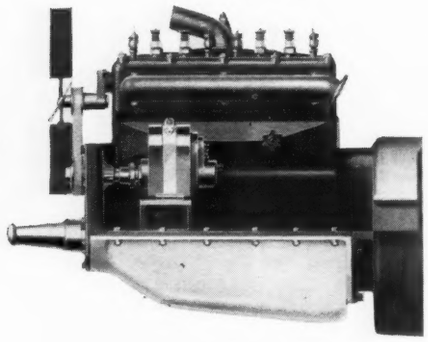
Empire Model A—Type 500A—Worm Drive Axle.

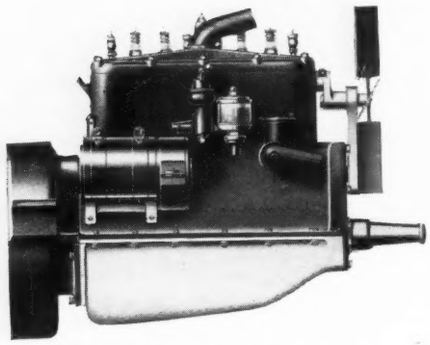
Drive and torque taken through springs; spring centers: 38 in. for 2½ in. springs; 58 in. tread; 7.2 to 1 ratio; drive shafts three-quarter floating type; housing of three pieces, center carries worm; entire axle runs in oil; for wheels with twelve 2-in. spokes; brake internal expanding, 13½ in. drums, 2¼ in. wide; heavy duty ball bearings; rated load 3550 lbs. on the tires; weight, 450 lbs.

Make your product pay—advertise in the CCJ

WISCONSIN—1-TON TRUCK ENGINE.

Made by the Wisconsin Motor Mfg. Co., Milwaukee, Wis.





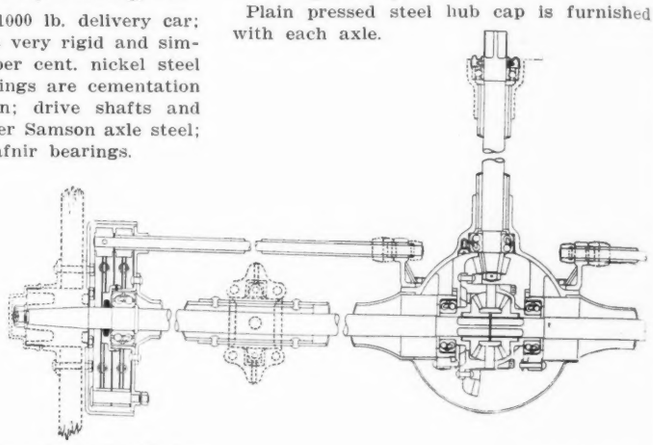
Type QU—4-cyl., 3¼ in. x 5 in.

The principal dimensions of this engine are given in the sectional views shown above. Additional specifications are as follows: Bore, 3½ in.; stroke, 5 in.; diameter of valves, 1 11-16 in.; length of connecting-rod bearings, 2 in.; diameter of piston pin, ⅞ in.; diameter of camshaft (one piece forging), 1⅛ in.; length of connecting-rod, 10 in.; drop from supporting arms to center of crankshaft, 3 in., 5 in.; width across supporting arms, 17¾ in., or 20 in.; 26¾ in.; water circulation, thermo-syphon or pump; h.p. (1000 r.p.m.), 16.9; piston displacement, 165.9; weight of motors, Q, 395 lbs.; QU, 435 lbs. Motor can be furnished without bell housing and is then designated at Type Q.

REAR AXLE—AMERICAN DIE & TOOL CO.

Made by the American Die & Tool Co., 2nd & Buttonwood Sts., Reading, Pa.

Model F Axle: For 1000 lb. delivery car; pressed steel housing is very rigid and simple; gears are of 3½ per cent. nickel steel case hardened; all castings are cementation steel, or malleable iron; drive shafts and axle shafts are Carpenter Samson axle steel; New Departure and Fafnir bearings.



American Die and Tool Company's Model F Axle.

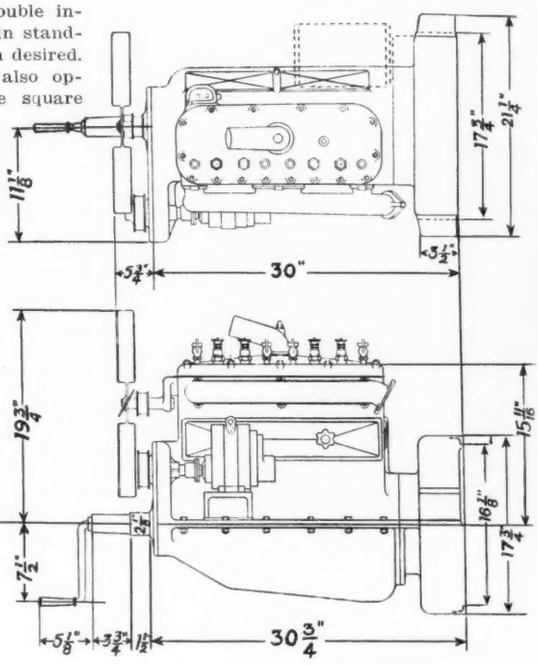
Special feature of this axle is double internal brake. The axle is furnished in standard tread with any spring pad width desired.

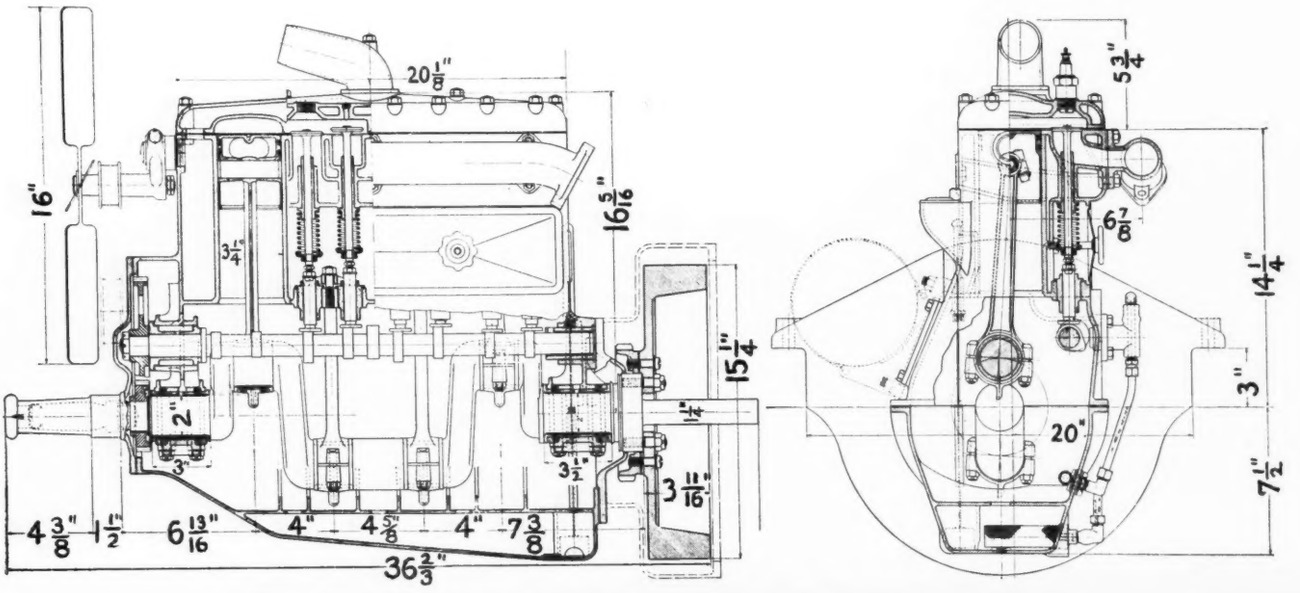
The length of third member is also optional; also the dimensions of the square end of the propeller shaft, the spring pads and the hubs.

Brake drums are 10 in. diameter, made of pressed steel.

Housing cover pressed steel.

Plain pressed steel hub cap is furnished with each axle.





Dimension Details of the Wisconsin Type QU—Four-Cylinder—3¼ x 5" Engine

For its readers—information; for its advertisers—results. That's the purpose of the CCJ

WARNER TRANSMISSION.

Made by the Warner Gear Co., Muncie, Ind.

Model T 46—for ½ to 1-ton trucks—Is a three speed and reverse transmission, unit with motor type, with central control mounted on the case cover. Either cone or multiple disc clutch is furnished as desired. Gears are 6-8 pitch with ¾ in. width of face. Gears and shafts are of nickel steel mounted on annular bearings. Customers may specify make of bearing desired subject to approval. A bronze bearing is furnished for the spigot support of the main shaft. The main shaft is a four key design and ground between the splines to give perfect fit and easy sliding qualities to the gears. The high speed gears are of the internal clutch type.

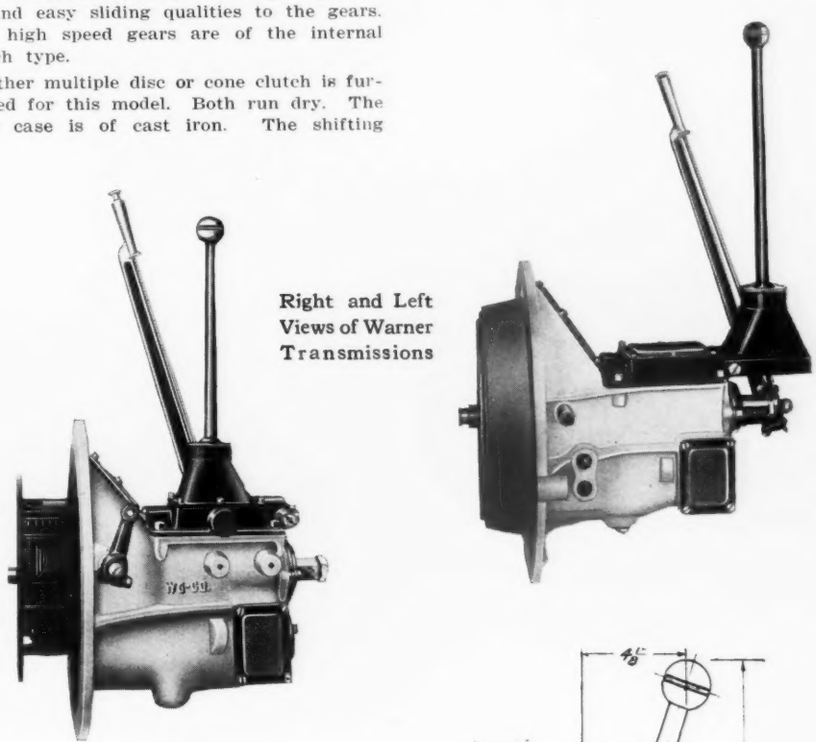
Either multiple disc or cone clutch is furnished for this model. Both run dry. The gear case is of cast iron. The shifting mechanism and interlock arrangement which allows only one gear in mesh at any time is contained as a unit in the casting which forms the cover of the gear box, and the support for the fulcrum type of control as well.

Model T 49A Transmission—Sub-Frame Type—½ to 1-ton Trucks—Is a new development to meet the demand for a mid-ship type. The gear set is the same as that of model T 46 of the unit type as far as ratio and size is concerned. The countershaft gears differ in that they are in two sets of two gears integral. The two sets are joined together on the countershaft by means of jaw clutches. Another difference is that the countershaft gears in the model T 46 are keyed to the shaft and mounted on annular bearings, while in the mdoel T 49A the gears are mounted on a stationary countershaft and revolve on bronze bearings. The main difference in construction is the bearing mountings of both the sliding and countershaft gears.

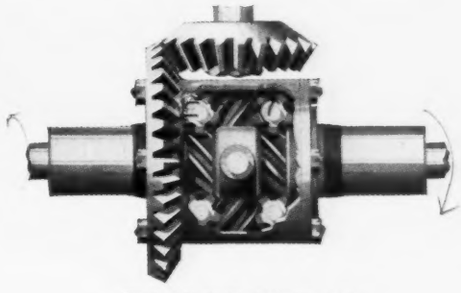
THE M. & S. DIFFERENTIAL.

Made by the M. & S. Gear Co., 1036-42 Whitney Bldg., Detroit, Mich.

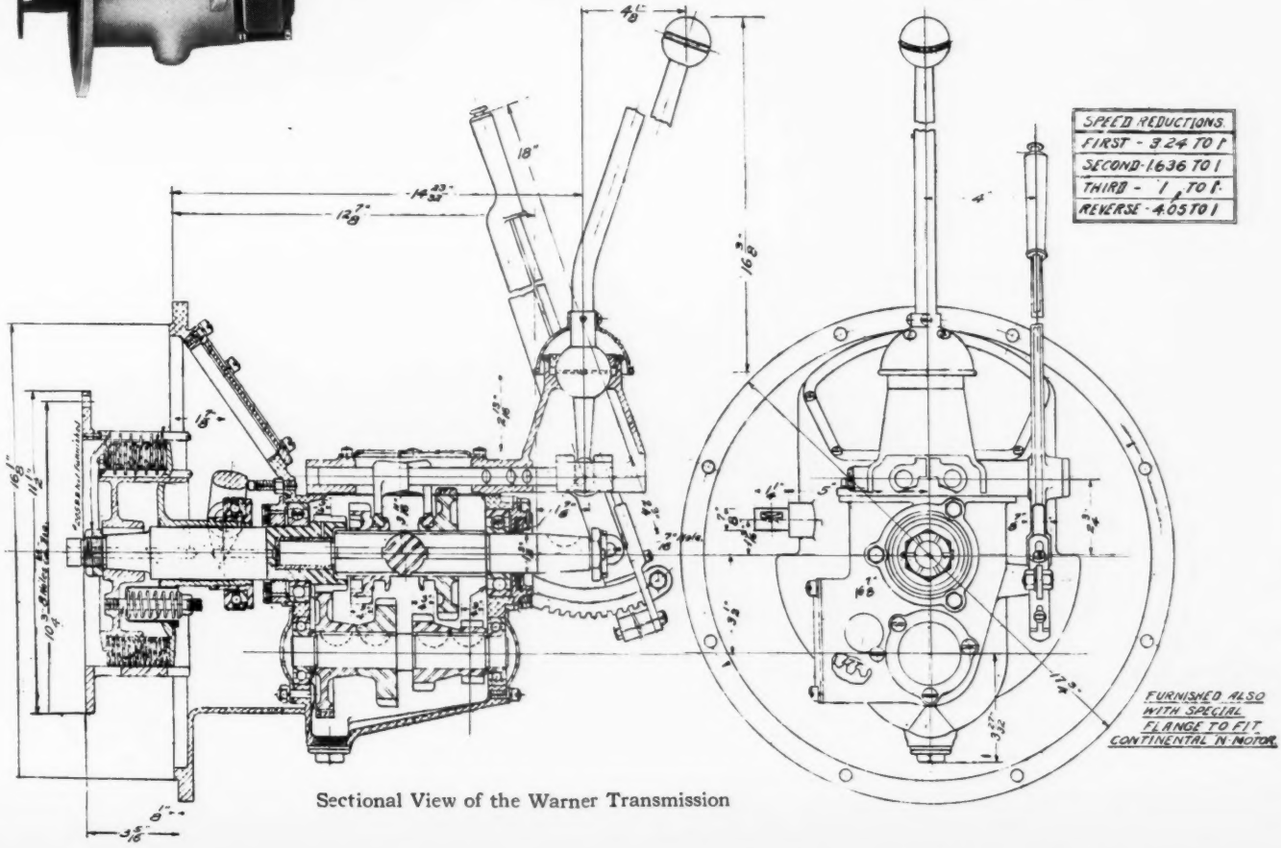
This differential is recommended especially for use in light delivery cars as it gives positive traction to both wheels at all times, due to its peculiar construction. In other words it eliminates the spinning of one wheel when the road resistance upon one wheel is reduced to a point at which it loses adhesion and would, with the regular differential, start spinning. This differential is interchangeable with all makes of axles. In this differential two or more pinions are mounted in the differential housing which



Right and Left Views of Warner Transmissions



The M. & S. Differential


SPEED REDUCTIONS.
FIRST - 3.24 TO 1
SECOND-1.636 TO 1
THIRD - 1 TO 1.
REVERSE-4.05 TO 1
FURNISHED ALSO WITH SPECIAL FLANGE TO FIT CONTINENTAL 'N' MOTOR.

Sectional View of the Warner Transmission

Why is the CCJ the only truck paper a member of the Audit Bureau of Circulations? Here's food for thought

is rotated by the engine, and also two crown wheels, one attached to either driving wheel. In addition there are worm gears interposed between the pinions and the crown wheels, the teeth on which are shaped to correspond. These worms are mounted in the differential casing with their axes at right angles to those of the pinions. The rotation of the differential housing in the usual way by the tailshaft causes both pinions and worm wheels to be carried around bodily in rigid relation to each other, whilst at the same time both pinions and worms have a power of rotation upon their own axes, so that they can move rotationally, but not bodily, in relation to each other. The angle of the worms is such that, whilst the crown wheels can drive the worms, the worms cannot drive the crown wheels, and, as a consequence, the differential is locked so far as any movement of the wheel in relation to the differential is concerned. The axle becomes for all practical purposes a solid one, and all the drive is taken up by the wheel, which is for the moment supported on firm ground and can take advantage of its grip.

SHELDON FRONT AND REAR AXLES.

Made by the Sheldon Axle & Spring Co., Wilkes-Barre, Pa.

This company builds a very comprehensive line of worm drive rear axles for trucks of ½, ¾ and 1-ton capacities. For ½-ton trucks the model W-1000 is recommended. The ½-ton front axle, the Model D-260, is the Model W-10. All of these are illustrated. The ½-ton front axle, the Model D-260, is recommended; for ¾-ton the model 33-FA-500, and for 1-ton the model D-343.

This company also specializes in the construction of springs and can furnish the proper spring equipment to go with any of the axle equipments above mentioned.

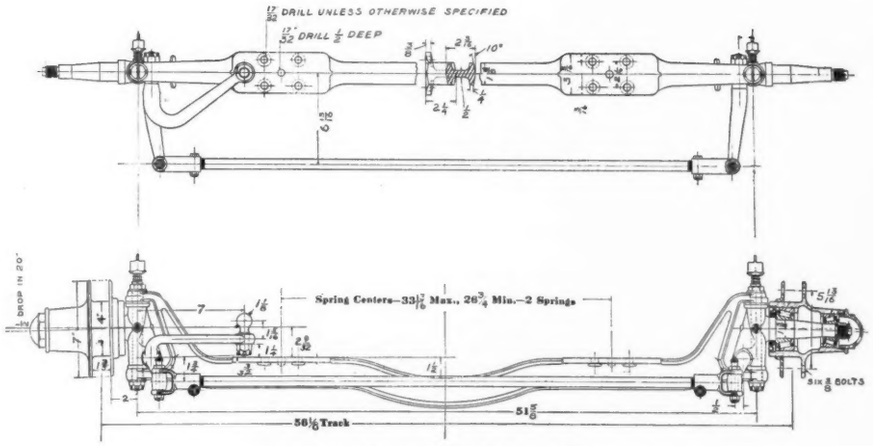
Sheldon ½-ton Front Axle No. D-260.

Bearings: Standard taper roller, Bower straight roller, New Departure or Fafnir double row annular bearings, or any standard double row annular bearings, are interchangeable. **Material:** Beds forged from high grade carbon steel, with steel bushing in the yoke end. Knuckles and steering arms high quality, special heat-treated alloy steel. Steering arms are bushed. Clevises are drop forged. Clevis pins, pivot bolts and ball pins are case hardened and ground. Cross-rod is steel tubing. Bronze thrust washers between the knuckle and top yoke. Approximate weight, 92 lbs. **Maximum Loads Allowable on Tires:** 27 in. spring centers, 1464 lbs.; 29 in. spring centers, 1522 lbs.; 31 in. spring centers, 1588 lbs.; 33 in. spring centers, 1660 lbs. All other dimensions, see illustration.

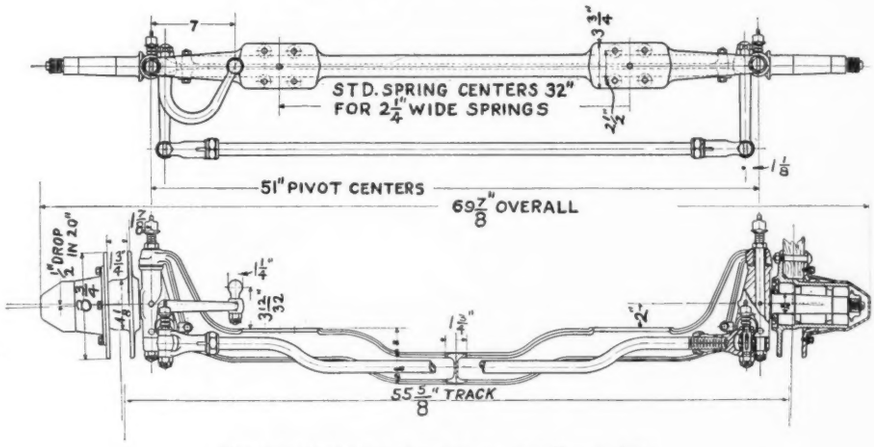
Sheldon 1-ton Front Axle, No. D-343.

Steering connections for fore and aft steer with double lever ball pin on left hand side side of axle. Cross-rod in the rear of the axle. Bearings: Bock; Standard and Wright Taper Rollers or Bower Straight Roller, Bock Top an interchangeable. **Material:** Beds forged from high grade carbon steel, with steel bushing in the yoke end. Knuckles and steering arms are high quality, special heat-treated alloy steel. Steering arms are bushed. Clevices are drop forged. Clevis pins, pivot bolts and ball pins are case hardened and ground. Cross rod is steel tubing. Thrust washers between the knuckle and top yoke. Pressed steel hub cap bolted to hub flange. Weight approximately 194 lbs.

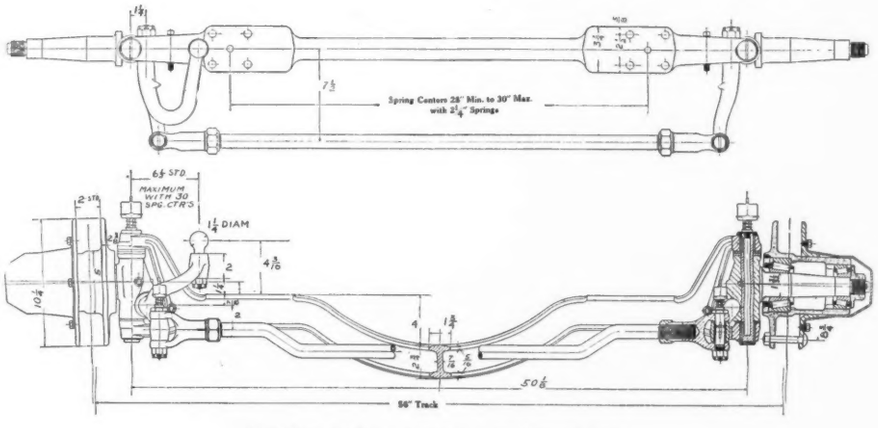
Maximum Loads Allowable on Tires: 28 in. spring centers, 2740 lbs.; 29 in. spring centers, 2785 lbs.; 30 in. spring centers, 2830 lbs. All other dimensions on illustrations.



Sheldon No. D-260, ½-ton Axle



Sheldon Model 33-FA-500, ¾-ton Front Axle



Sheldon Model D-343, 1-ton Front Axle

Sheldon ½-ton Worm Gear Rear Axle—Type W-1000.

For use on cars of 1000 lbs. capacity. Maximum loads allowable on rear pneumatic tires, with maximum spring centers, 2400 lbs. This weight includes weight of truck, pay load and maximum overload; 6.2 to 1 standard ratio. Worm wheel 1¾ in. face of special formula bronze. The worm, worm wheel and differential are assembled in the worm carrier and can be removed from the housing as a complete unit. Brakes are double internal cam, 1¾ in. wide, with 14 in. drums. The brake shoes are malleable iron lined with Thermoid. Drums, pressed steel.

Maximum and minimum spring centers on this axle are as follows:

35¾	in.	to	39¾	in.	with	1¾	in. springs
39¾	in.	to	42¼	in.	"	1¾	in. "
36	in.	to	39½	in.	"	2	in. "
40	in.	to	42	in.	"	2	in. "
36¼	in.	to	39¼	in.	"	2¼	in. "
40¼	in.	to	41¾	in.	"	2¼	in. "
36½	in.	to	39	in.	"	2½	in. "
40½	in.	to	41½	in.	"	2½	in. "

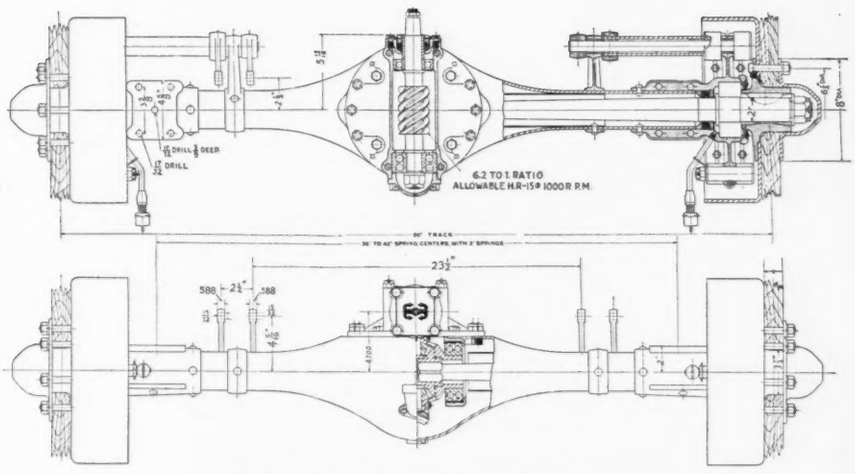
In each case the spring clip hole is 17-32 in.

Sheldon ¾-ton Worm Drive Rear Axle—Type W-1500.

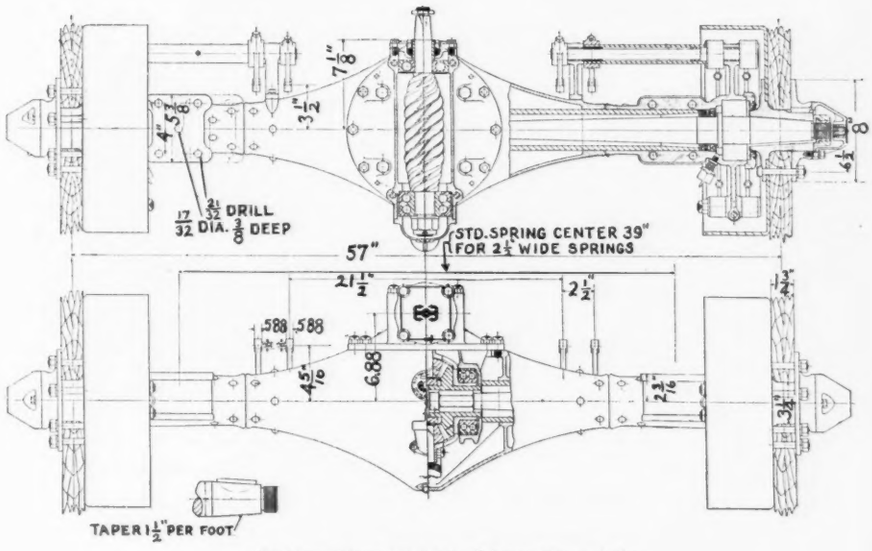
This axle is furnished only in 57 in. track. Track can be reduced to 56 in. by simply offsetting the felloe of each wheel ½ in. Standard gear ratio 6.5 to 1; 7.8 to 1 can be furnished if desired. Maximum load allowable on rear tires is 3850 lbs. Weight approximately 580 lbs. Drive through rear springs. No radius or torque rods furnished.

Sheldon 1-ton Worm Gear Axle—Type W-10.

Maximum load allowable on rear tires, with maximum spring centers, 5440 lbs. This includes weight of truck, pay load and maximum overload. Worm wheel 2½ in. face, of special formula bronze. Differential gears and pinions are 3½ per cent. nickel steel, heat treated, with 1½ in. face and 4 in. pitch. Brakes are 16 in. dia., 3 in. wide. Internal are self-intensifying and easily adjusted. The external are of the wrap-up type, with quick adjustable thumb nuts. One-piece cast steel axle housing.



Sheldon Type W-1000, ½-ton Rear Axle

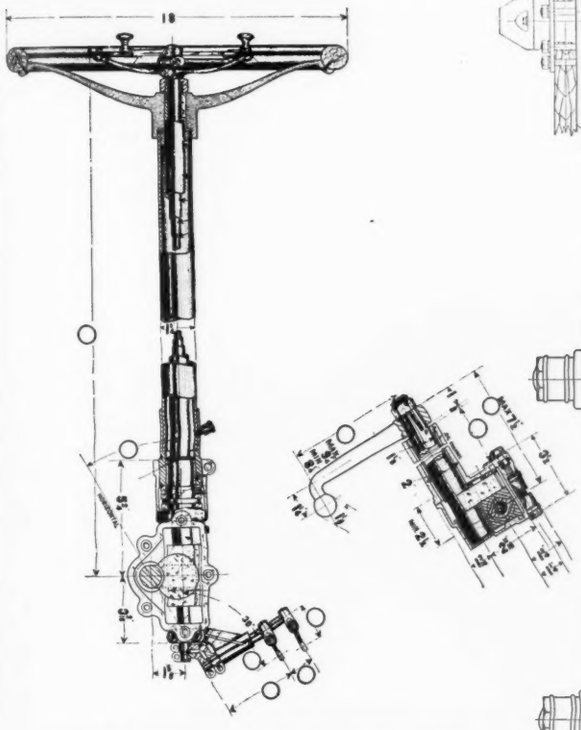


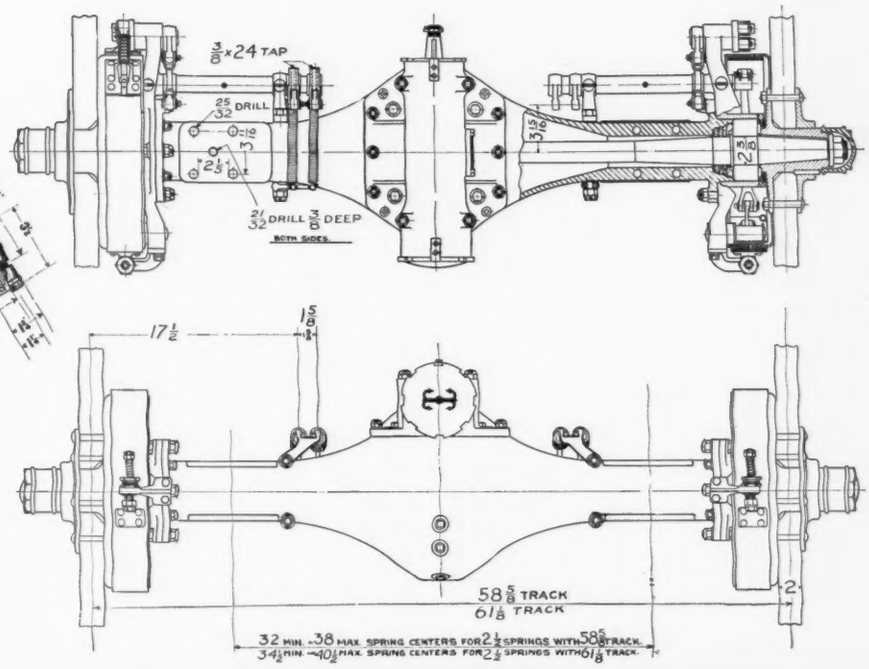
Sheldon Type W-1500, ¾-ton Rear Axle

ROSS FORE AND AFT STEERING GEAR.

Made by the Ross Gear & Tool Co., Lafayette, Ind.

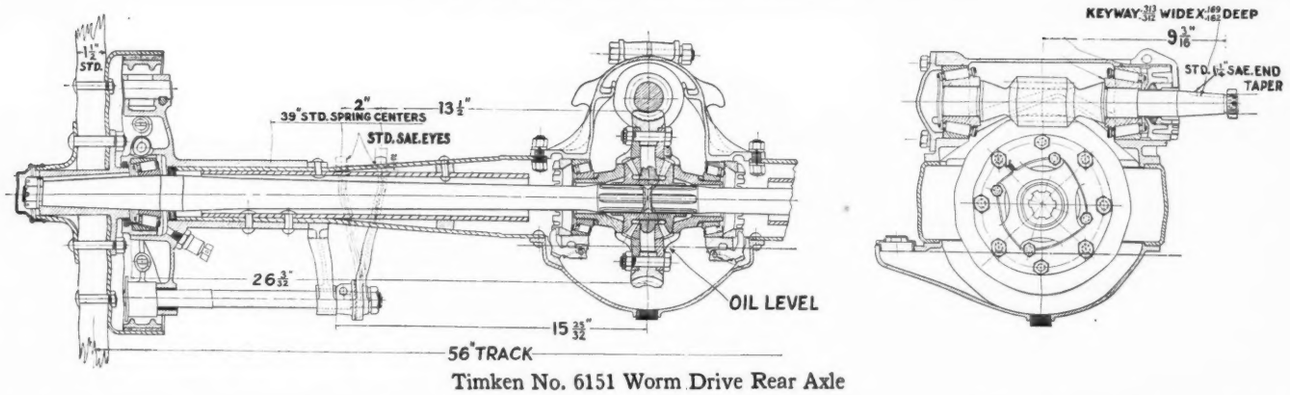
Type BR—Recommended for installation on motor trucks of 1000 and 1500 lbs. capacity and on one ton trucks where not more than 15 per cent. of the pay-load is carried on the front axle and where the speed does not exceed 16 m.p.h.; also for taxicabs not exceeding 3600 lbs. in weight. It is built in right and left hand models and in two reductions—8 to 1 and 12 to 1. The 8 to 1 reduction requires 1 1-3 turns of the steering wheel to operate the steering arm through its full travel of 60 deg. and the 12 to 1 reduction requires 2 complete turns of the steering wheel. The total weight of the gear is 40 lbs. Main dimensions are given in the accompanying illustration. Circles denote dimensions which are made to suit purchaser.





Sheldon Type W-10, 1-ton Rear Axle

The CHILTON ideal—*honest circulation; results to advertisers—fully exemplified in the CCJ*



Timken No. 6151 Worm Drive Rear Axle

TIMKEN NO. 6151 WORM DRIVE REAR AXLE.

Made by the Timken-Detroit Axle Co., Detroit, Mich.

Timken-Detroit Axle No. 6151.

Worm Drive Fixed Hub Type for One-ton Capacity and Under.

Pressed steel one-piece housing; torque taken through springs; driving mechanism a separate removable unit; worm is of nickel chrome steel; gear wheel of special bronze; brakes are 14 in. diam.; oil system of lubrication; gear ratio, 5.8:1; track, 56 in.; spring centers, 39 in.; springs, 2 in.; brake lever eyes and worm shaft end are S. A. E. standard. This axle is for use with pneumatic tires; maximum weight permissible (truck and load) on the rear tires at ground, 2000 lbs.; maximum h.p. permissible through differential, 21, A. L. A. M. rating.

RUSSEL INTERNAL GEAR DRIVE AXLE.

Made by the Russel Motor Axle Co., North Detroit, Mich.

Type P—¾-ton Internal Gear Drive Rear Axle:

Weight, including wood wheels, hubs, drums and bearings, 383 lbs.; max. weight, allowable on spring pads, 3500 lbs.; tread, 56 in.; gear reduction, 6.8 to 1, 8.2 to 1; road clearance, 13 in. with 34 in. wheels; width of springs, 2¼ in. x 3 in.; clip holes, as specified; brake drums, 14 in. diameter; brakes, external 2½ in. wide, contracting type; internal, 1¾ in. wide, expanding type, cam operated; drive and torque, designed to be taken through springs; bevel gear set, 5 pitch, ⅞ in. face, hardened, adjustable for mesh of teeth; internal gears and pinions, 6 pitch, 1⅛ in. face; internal gear, .40-.50 carbon steel; pinion, 3½ per cent. nickel steel hardened; three teeth constantly in mesh with gear, reducing tooth pressures to a minimum; jackshaft, 1⅛ in. diameter, .35-.40 carbon steel splined to take pinion; propeller shaft, 1⅛ in. diameter; squared, 13-16 x 1; wheel bearings; 307-309 sizes; length of brake levers, external, 6 in. eyes for ½ in. S. A. E. pull rods; internal, 6 in. eyes for ½ in. S. A. E. pull rods; wheel spokes, designed for 12 spokes, any width desired above 1½ in.; load carrying member, solid round bar 2¼ in. diameter of chrome nickel steel; bearings, ball and roller types throughout; internal gear and brake drum are built up into one unit with accurately fitted bolts and piloted onto the wheel hub. Both easily removed from wheel by loosening hub bolts.

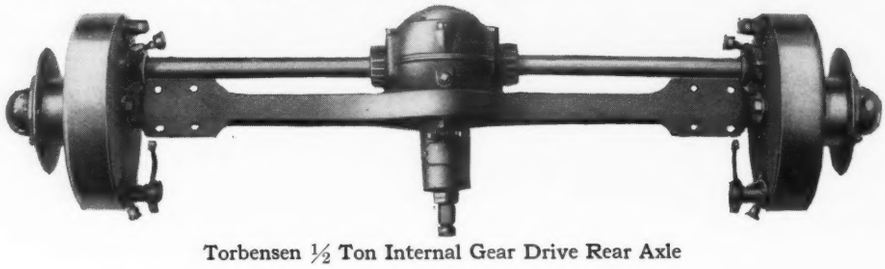
TORBENSEN ½-TON AXLE.

Made by the Torbensen Axle Co., 1115 East 152nd St., Cleveland, O.

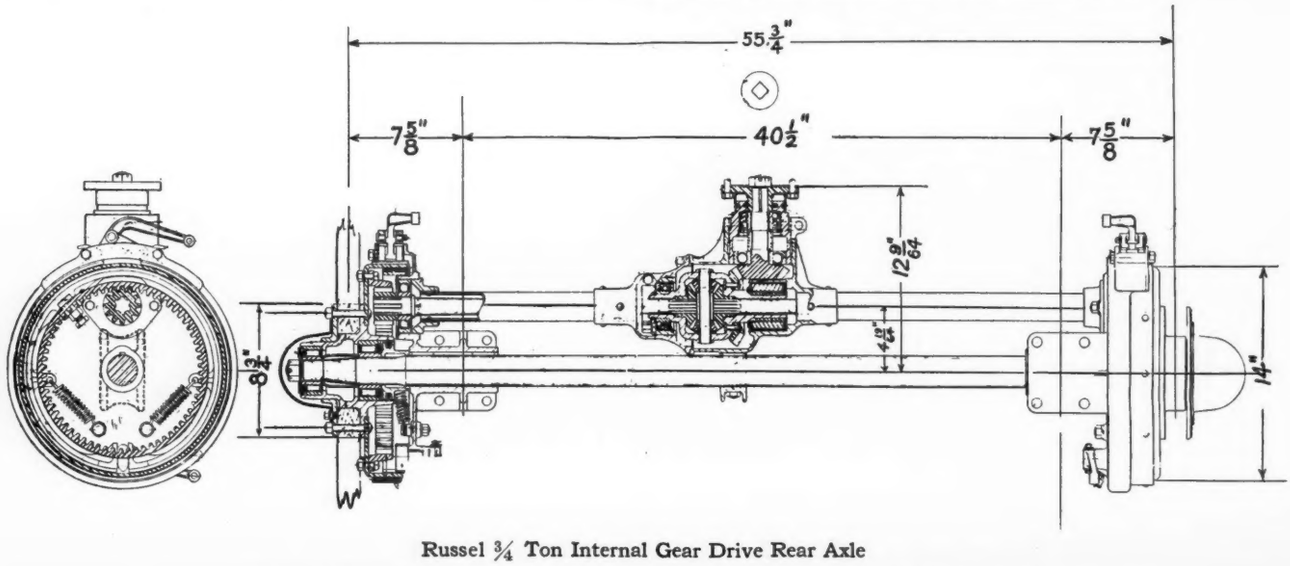
Model O—Internal Gear Drive Axle—1000-lb. Capacity.

Specifications are as follows: Width of track, 56 in.; width of spring centers, maximum, 40½ in.; width of spring centers, minimum, 37 in.; width of springs, 2 in.; final ratio, 5:1; weight of axle complete with hubs, 235 lbs.; maximum carrying capacity (truck and load), 2700 lbs..

The design of this axle follows closely the Standard Torbensen practice. The I-beam is a .40 carbon steel, heat-treated drop forging, 2¾ in. x 1½ in., having center web 7-16 in. thick. Spindles of chrome vanadium steel, 1 9-16 in. in diameter, are shrunk into the ends. The expanded central portion of the web is bored and faced to receive the differential carrier. The differential, of Brown-Lipe-Chapin manufacture, is mounted on Bock roller bearings. As the gear reduction is small at this point, the differential and differential carrier are correspondingly small, giving a maximum of road clearance. The vital point, however, is the rigid mounting of the differential in the expanded center of the I-beam web, and the manner in which the jackshafts and cover tubing are flexibly inserted into the differential and differential carrier. On account of these flexible connections no stress is put upon the differential and its bearings, other than driving stresses, leaving the driving axle absolutely free from road and load stresses.



Torbensen ½ Ton Internal Gear Drive Rear Axle



Russel ¾ Ton Internal Gear Drive Rear Axle

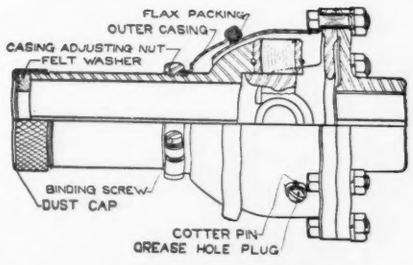
Advertising appropriations bring greatest returns when expended in the CCJ

SPICER UNIVERSAL JOINT.

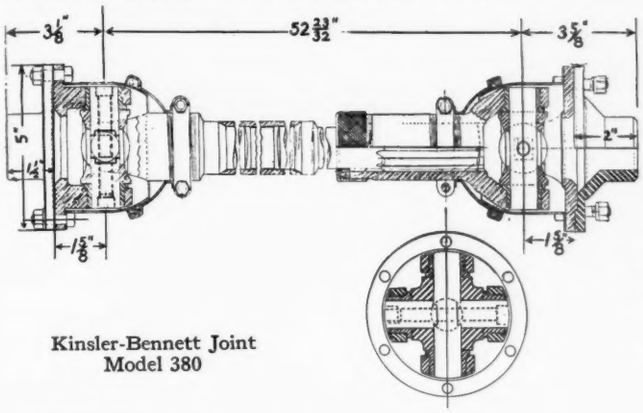
Made by the Spicer Mfg. Co., Plainfield, N. J.

Trucks varying in size from 1000 lbs. to 1-ton would require joints varying in size from 4¾ O. D. x 4⅝ in. long to 5 in. O. D. x 7⅞ in. long, and varying in weight from 7 to 10 lbs., not including the connecting shaft.

The forward universal joint includes a slip joint which allows for any variation in the overall length of the set due to spring action. The slip joint is made with ten parallel splines giving maximum bearing surface. The shaft connecting the two universal joints is made of high carbon, cold-drawn steel tubing, which adds materially to both lightness and stiffness, as opposed to the solid shaft, which heretofore has been in common use.



The Spicer Universal Joint

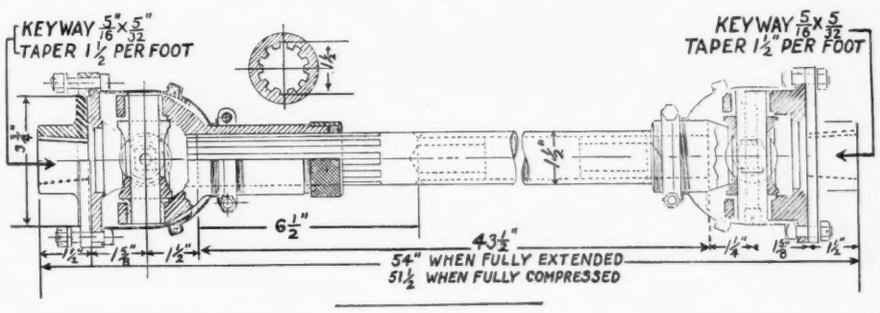


Kinsler-Bennett Joint
Model 380

KINSLER-BENNETT UNIVERSAL JOINTS

Made by the Kinsler-Bennett Co., Inc., Hartford, Conn.

Kinsler-Bennett Universal Joints—Model No. 380. Both of these joints are suitable for trucks up to one ton and can be used with either solid or tubular shafts. The principal dimensions are given in accompanying diagrams.



The valves are 1⅜ in. in diameter and have 9-32 in. lift, being operated by mushroom type valve lifters which are made hollow to cut down the weight. The valve lifter is off the center of the cam ⅛ in. to revolve the lifter, each revolution of the shaft to distribute the wear. On account of the short length of the crankshaft it is carried on two main bearings of large diameters. The cheeks of the shaft are also very wide, which permits a shorter bearing used. It is drop forged of 37-47 carbon steel double heat treated.

The pistons are cast iron with three rings. The piston is relieved around the pin bosses to overcome tendencies of scoring. The piston pin is held into the piston with a hard screw having a cotter pin through it inside of the pin to prevent the piston pin working out and scoring the cylinder. The piston is 4 in. long with very thin walls and weighs 22 oz., while the entire weight of the piston, piston pin and rings is 27 oz.

The camshaft is drop forged of a special steel and has large bearings running in bronze bushings. The connecting-rod length is twice the stroke, and is of the I-beam section drop forge steel, heat treated, and has a bronze bushing in the piston pin end, and carries a die cast babbitt metal bearing in the crank pin end and weighs complete with bearings, bolts, etc., 34 oz.

With the short stiff crankshaft and well balanced flywheel and with the pistons and connecting-rods weighted together and balanced to within ¼ oz., the engine is capable of running to extremely high speeds, showing its maximum h.p. at 2500 r.p.m.

The oiling system is combination pressure and splash, the overflow caring for the helical timing gears. Cooling is thermo-syphon, assisted by large three-blade fan, which is carried on die cast bearings, and is lubricated with wick oiler, carrying sufficient amount of lubrication to run continually for six months. Knowing the neglect of grease cups, this company has entirely eliminated them from any part of the engine.

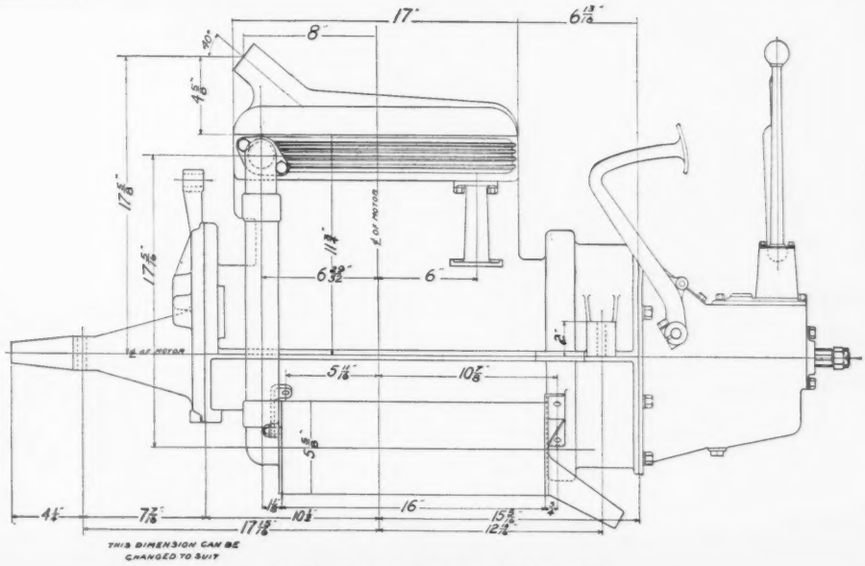
A very convenient method of attaching the muffler is employed, as it is held to the engine by the exhaust pipe in front and by a bracket in the rear. This forms a very neat and compact unit, and is shipped to the customer complete with transmission, magneto, carburetor, electric lighting and starting outfit and muffler ready to drop into the frame.

LIGHT MODEL "H" ENGINE

Made by the Light Mfg. & Foundry Co., Pottstown, Pa.

The Light Model "H," 3¼ x 4½ in., four-cylinder engine is of somewhat unusual design, as the cylinder, crankcase, exhaust and intake manifold is cast integral. The gas is carried along underneath the hot exhaust pipe, heating the charge before it enters the cylinders. The intake passage is quite long, and grows smaller as it nears the valves. The long passage tends to increase the gas velocity, and insuring the maximum h.p. output of the engine.

The exhaust manifold has the opening at the front of the engine, and is water cooled on one side, and has ribs running on the outer side to help effect cooling. The head is detachable, being held in place with nickel steel studs. A copper asbestos gasket is used between the head and the cylinder.



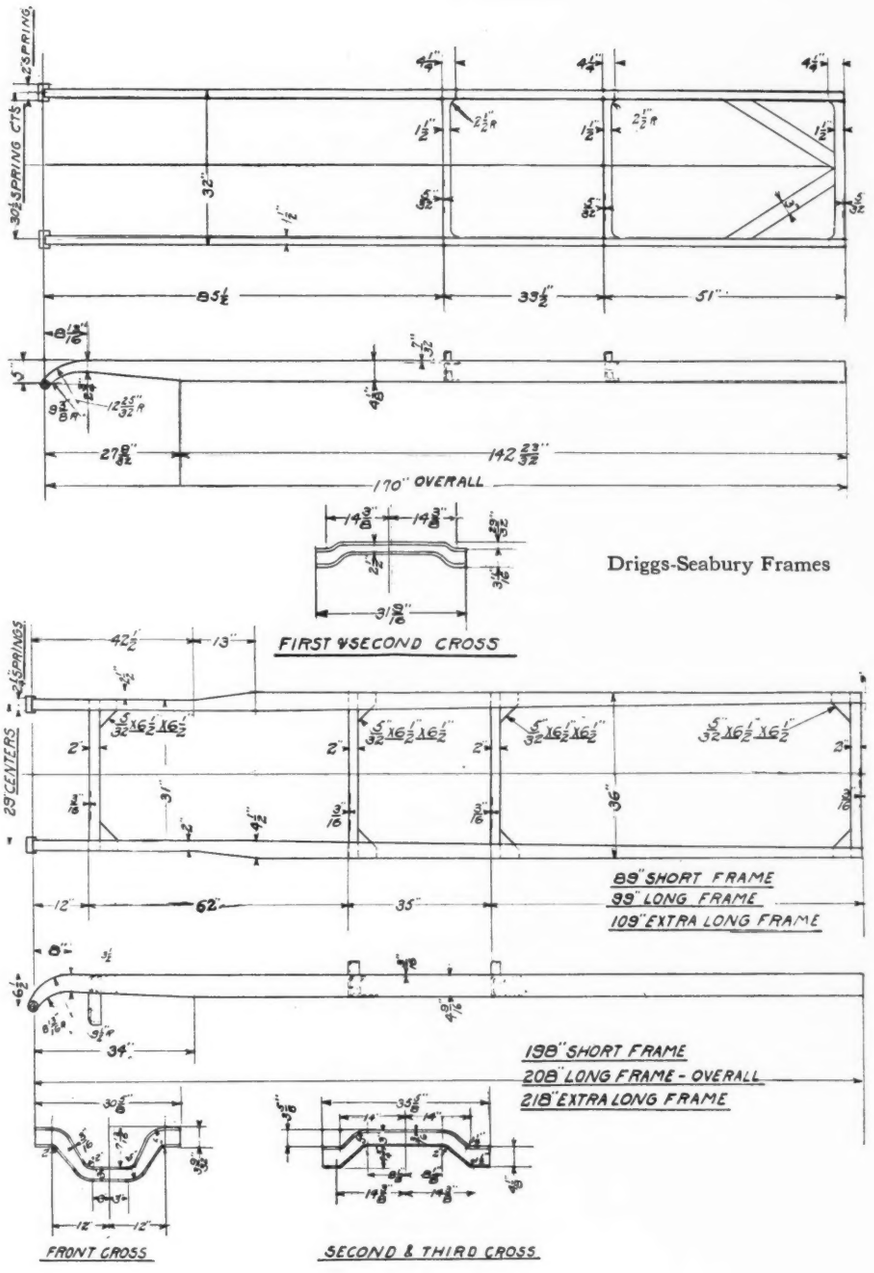
Light Engine, Model H, 3¼ x 4½

Everybody who is anybody in the truck industry reads the CCJ

FRAMES, PRESSED STEEL PARTS AND DROP FORGINGS.

Made by the Driggs-Seabury Ordnance Corp., Sharon, Pa.

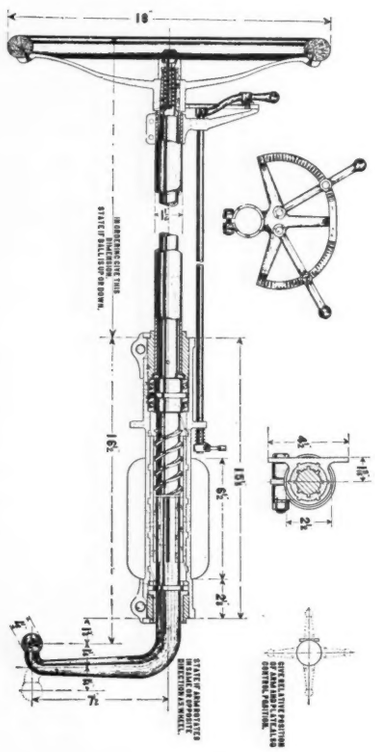
The Driggs-Seabury Ordnance Co., Sharon, Pa., manufacture pressed steel frames of any size. This company recently made extensive improvements in its pressed steel and drop forge departments, greatly increasing its capacity. In the pressed steel department it has installed a new design of heavy duty hydraulic press, particularly adapted for the manufacture of truck frames.



Driggs-Seabury Frames

ROSS CROSS TYPE STEERING GEAR.

Made by the Ross Gear & Tool Co., Lafayette, Ind.



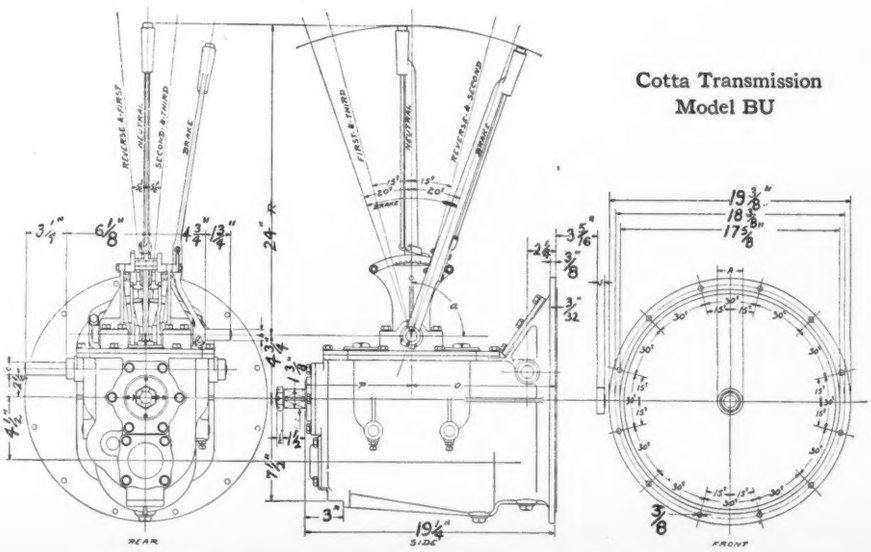
Type BA recommended for use on motor trucks of 1500 lbs. to one ton capacity. The reduction in this type steering gear is 9 to 1; that is, 2¼ turns of the steering wheel are required to operate the steering arm through its maximum throw of 90 deg. The total weight of the gear is 45 lbs.

COTTA TRANSMISSION FOR ½ TO 1-TON TRUCKS.

Made by the Cotta Transmission Co., Rockford, Ill.

Installing Dimensions for Cotta Transmission—Model BU for Unit Power Plants.

This transmission is of the selective type, individual clutch system with all gears always in mesh, and with speed change gears mounted on roller bearings. This Model BU Transmission can be used with engines developing from 25 to 35 h.p., with capacity of from ½ to 1½ tons. Gears have 1 in. face, pitch 6-8. The gear ratios are: 1st speed, 4:1; 2nd speed, 2:1; 3rd, or direct, 1:1; reverse, 4.125:1.



Cotta Transmission Model BU

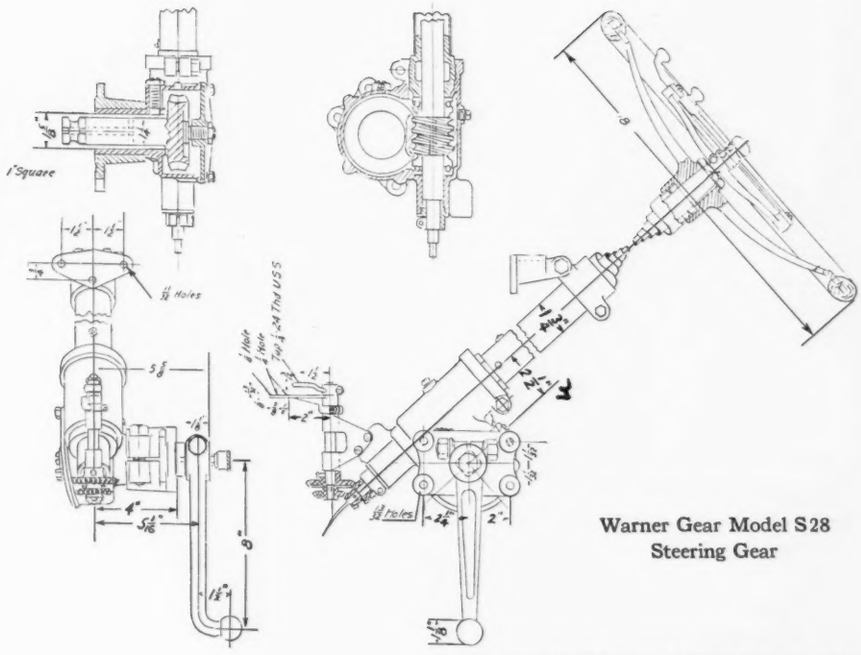
Plenty of the right kind of circulation means quantity results to advertisers in the CCJ

WARNER STEERING GEAR.

Warner Gear Co., Clark and Penn Sts., Muncie, Ind.

Model S28 steering gear—1500 lbs. to 1½-ton trucks—worm and full gear type—either right and left hand drives with or without spark and throttle controls, electric horn button if desired and a hard felt bushing supports the jacket tubing at the top and prevents any squeaks or seizing of the shaft. By removing the crank and revolving the gear an entirely new set of teeth of the worm gear are brought into use.

Full adjustment to allow for wear is also furnished by means of an eccentric bush around the shank of the worm gear, and an adjusting nut just above the worm gear allows for any vertical adjustment of the worm.

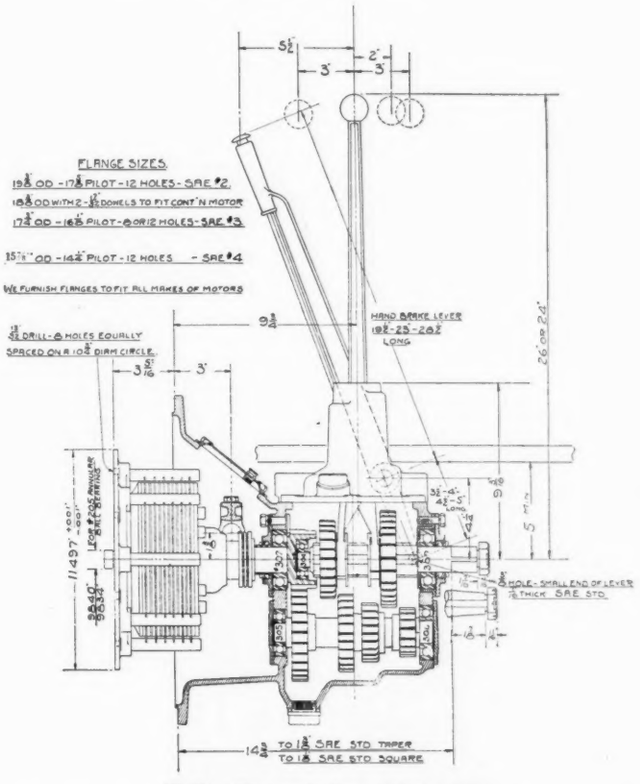


Warner Gear Model S28 Steering Gear

FULLER TRANSMISSIONS.

Made by Fuller & Sons Mfg. Co., Kalamazoo, Mich.

This company offers its Model TU Transmission for ¾ and 1-ton pay load cars. A special 3½ per cent. cross rolled nickel steel is largely used in the gears. The shafts are of chrome nickel steel. The main shaft is of the four-spline type, 1⅞ in. over the keys. The extra large 23-tooth reverse idler gear runs on a roller bearing. No plain bearings are used. Three types of controls are furnished: Forward and rear position, center and seperate type for outside mounting. They may be arranged for right or left steer; center control is of the ball or socket type. Raybestos clutch facings. Clutch can be furnished to operate in oil, steel against steel type.

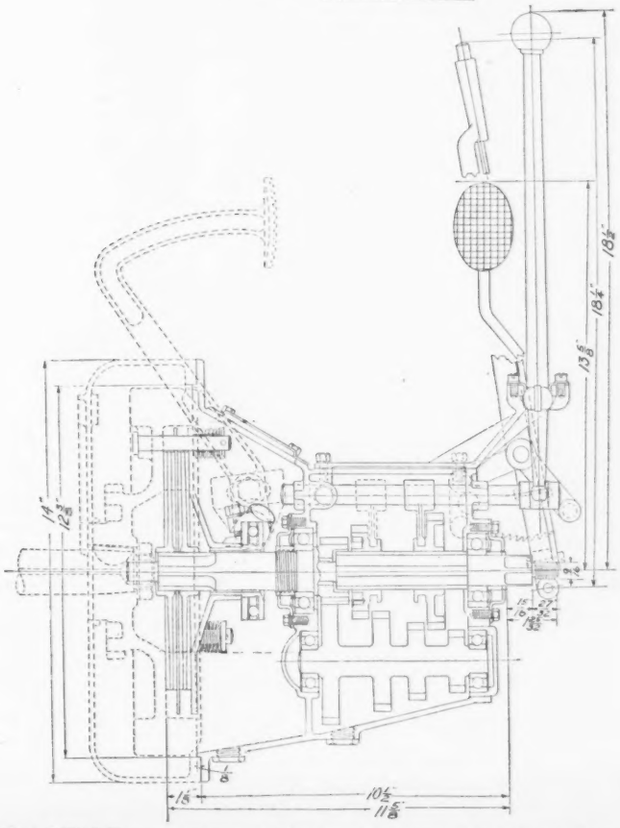


Fuller Transmission—Model TU
Showing forward lever position control of ball and socket type, left-hand steer, gear set, ball bearings and multiple disc dry plate clutch.

TRANSMISSION—AMERICAN DIE & TOOL CO.

Made by the American Die & Tool Co., 2nd & Buttonwood Sts., Reading, Pa.

Model E M transmission: This transmission is designed for 1000 lb. delivery car: All gears 3½ per cent. nickel steel case hardened; shafts of heat treated axle steel; dry disc type clutch; New Departure and Fafnir bearings and adaptable to any standard 20 to 30 h.p. engine and is furnished in either No. 4 or No. 5 standard S. A. E. bell housing. Gear ratios are as follows: third speed, 3.71 to 1; second speed, 6.82 to 1; first speed, 11.27 to 1; reverse, 11.87 to 1.



Model EM Transmission—Made by American Die & Tool Company

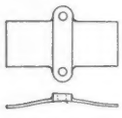
TUTHILL SPRINGS.

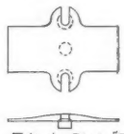
Made by the Tuthill Spring Co., 760 Polk St., Chicago, Ill.

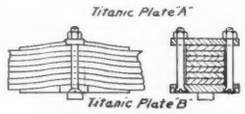
The feature of these springs is the no-center-bolt construction. The makers recommend the following dimensions for use on 1000 to 1500 lb. trucks:

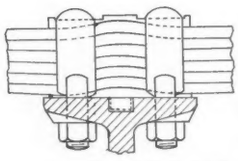
Fronts, semi-elliptic, 2¼ in. wide, 38 in. long; rear, semi-elliptic, 2½ in. wide, 48 to 52 in. long.

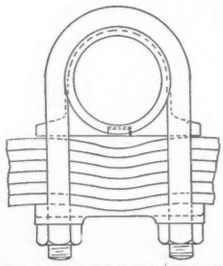
The rear springs of the Titanic design are protected against breakage by the wedge shaped retaining plate.











SCHWARZ WHEELS.

Made by the Schwarz Wheel Co., Frankford, Philadelphia, Pa.

This company can furnish any weight or style of wheel desired to fit ½ to 1-ton trucks. The well-known Schwarz demountable wheel for Ford cars is illustrated, as is also the interlocking spoke construction which goes into the making of every Schwarz wheel. Where pneumatic equipment is to be used the demountable wheel is recommended. The demountable rim will take 30 x 3½ in. clincher tires.

When ordering Schwarz wheels state size of spoke, number of spokes wanted, outside diameter of hub flange, size and character of tires to be used, size of hole to be bored for hub barrel. Schwarz wheels are made with 14 spokes as standard, unless otherwise ordered. Wheels can be made any number of spokes, straight or with any dish desired.

Schwarz Demountable Wheels for Fords

Interlocking Spoke Construction of the Schwarz Wheel Company

SEWELL CUSHION WHEEL.

Made by the Sewell Cushion Wheel Co., Detroit, Mich.

For 1-ton trucks and over. Built in both single and dual type, and to fit the different hubs used by the motor truck manufacturers. They are equipped with S. A. E. bands, which will take any standard make or style of solid tire of the same size. The wheel is built with two wooden felloes, the space between the outer and the inner felloe being occupied by a soft rubber cushion. The soft, flexible, rubber cushion between the inner wheel and the outer felloe absorbs the vibration before it is transmitted to the motor mechanism and other vital parts of the trucks.

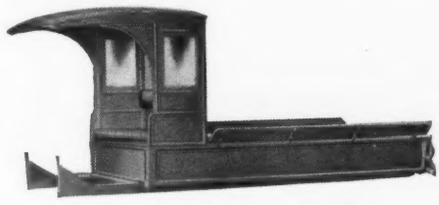
The rubber flange on each side of the wheel expands and contracts with every movement of the rubber cushion and makes the space containing the cushion absolutely proof against dirt, grease, water and light.

Sewell Cushion Wheel

BODIES FOR CONVERTED FORD CHASSIS.

Made by the Columbia Wagon Co., Columbia, Pa.

Bodies illustrated below are built expressly for any make of converted Ford chassis. Special length bodies can be had on order.

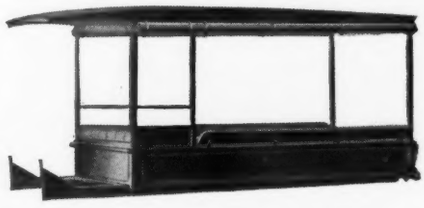


Open Express Body, No. 60B, Cab Top

Dimensions as follows: Length over all, including gun stocks, 11 ft. 2 in.; length inside, 9 ft.; length rear of seat, 7 ft. 4 in.; width inside, 3 ft. 9 in.; depth of sides, 10 in.; width of flareboards, 6 in.; width of seat, 18 in.; length of seat, 3 ft. 11 in.; imitation leather cushion; chain end gate; dark green regular color; other colors if desired.

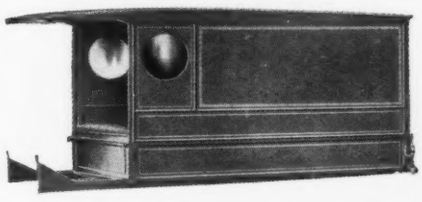
Open Express Body, No. 60A

The dimensions for this body are the same as for the one shown above—the cab is, of course, eliminated.



Six Post Express Body, No. 60C

Same dimensions and specifications as for the Open Express Body No. 60B, with the exception of the sides which are 10½ in. Curtains are black oiled black duck.



Full Panel Express Body, No. 60D

Dimensions as follows: Length over all, including gun stocks, 11 ft. 2 in.; length of body inside, 9 ft.; length rear of seat, 7 ft. 4 in.; width inside, 3 ft. 9 in.; height rear of seat, 4 ft. 5 in.; length rear of seat, 3 ft. 9 in.; width of seat, 18 in.; painted dark green regular; other colors if desired; imitation leather trimmings; brass handles; heavy oiled duck curtains; also built with double doors in rear if desired; chain end gate regular.

PRUDDEN WOOD WHEELS.

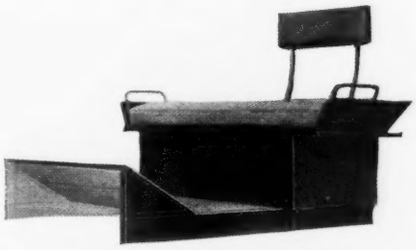
Made by W. K. Prudden & Co., Lansing, Mich.

This company can furnish hickory artillery-type wheels for ½ to 1-ton trucks with either round or square barrel spokes equipped with S. A. E. bands from a 30 x 3½ in. single to a 42 x 7 in. dual S. A. E. or pneumatic equipment. This company does not supply stock wheels, all its jobs being made to specifications.

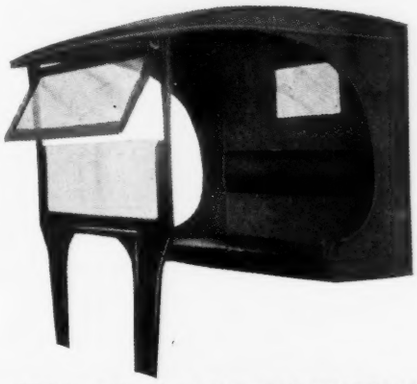
HIGHLAND BODIES OFFERED IN VARIOUS STYLES AND SIZES.

Made by the Highland Body Mfg. Co., Cincinnati, Ohio.

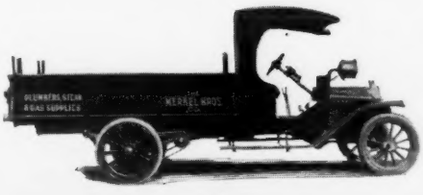
This concern makes many types of bodies suitable for various trades. These bodies are made in all sizes from ½ to 10-tons. Besides the bodies are offered a very complete line of cabs, seats and risers. Body and seat are separate units in models other than the panel model.

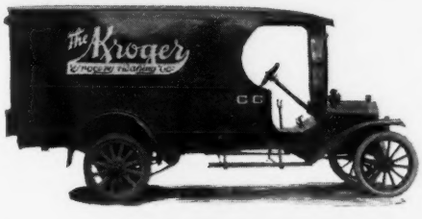


Standard Open Seat and Box



Highland Standard Cab, With Windshield





Highland Bodies for Ford Chassis and Converted Ford Truck Chassis

Model F, full panel, 44 x 54 x 56 in. load space; Model FH, full panel, 44 x 66 x 56 in. load space. The enclosed full panel Models FC and FHC are offered with the same respective size load spaces. Model FB, straight side full panel has load space of 48 x 66 x 56 in., and Model FX, roadster panel is 43 x 45 x 51 in. Many other models are offered including the open express type, screened express, flareboard. This company also offers fenders, windshields and auxiliary dashes for completing the equipment.

A line of bodies is also being made designed for attaching to the Ford chassis that has been converted to a truck chassis by one of the numerous converting units manufactured. Open express, full panel and stake bodies make of this line, and these are offered in various sizes.

BELKNAP BODIES, SEATS, CAB TOPS.

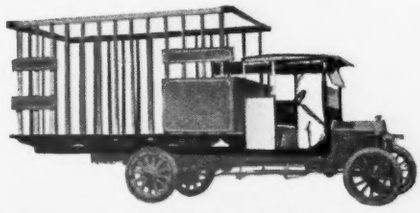
Manufactured by the Belknap Wagon Co., Grand Rapids, Mich.

This concern makes a variety of commercial auto bodies, seats, cab tops, wood frame windshields, etc., suitable for 1000 lb. to 1-ton trucks. Installing dimensions vary to suit the various lines of businesses and the makes of trucks. These parts are furnished either in the white or primed or painted and lettered complete ready to attach.

P. S. C. O. FORMED-STEEL PARTS.

Made by the Pressed Steel Co., New York City.

This concern produces P. S. C. O. formed steel parts, a process for the production of drawn metal within accuracies as close as .001 in some finished parts. Brake drums, flanges, hub caps and many other parts are made in all sizes and types.



Kratzer S. F. Paper Box Body for Fords

This body shown with Ford chassis is offered by the Kratzer Carriage Co., of Des Moines, Iowa, and is known as No. 98, S.F. Paper Box Body. Body is 61 in. wide and comes in three lengths, 111, 120 and 148 in. Stakes 72 in. high. Cab is 46 in. wide, 44 in. long and 53 in. high, outside measurements.

Mifflinburg Body for Ford Chassis

This is the No. 207 Panel Top Body made by the Mifflinburg Buggy Co., of Mifflinburg, Pa. Dimensions inside are 56 x 40 in. and 4 ft. 6 in. high. This concern also makes many other types of bodies for the Ford and Maxwell chassis.

HIGGINS SPRINGS.

Made by the Higgins Spring & Axle Co., Racine, Wis.

This company makes springs of any type and size. Each spring is fully equipped with rebound clips and a special high-grade spring leaf lubrication is inserted between each leaf.

Rock Hill Body for Ford Car

This body is designed to handle from a 1000 to 1500 lb. load and is made to fit the Ford chassis by the Rock Hill Buggy Co., of Rock Hill, S. C.

Excelsior Open Body Model

Made by the Excelsior Seat Co., of Columbus, Ohio. It is known as the Open Body Driver's Cab Model A, No. 712. Load space 43 x 66 in.

Bollwerk Oil Tank Body for Ford Chassis

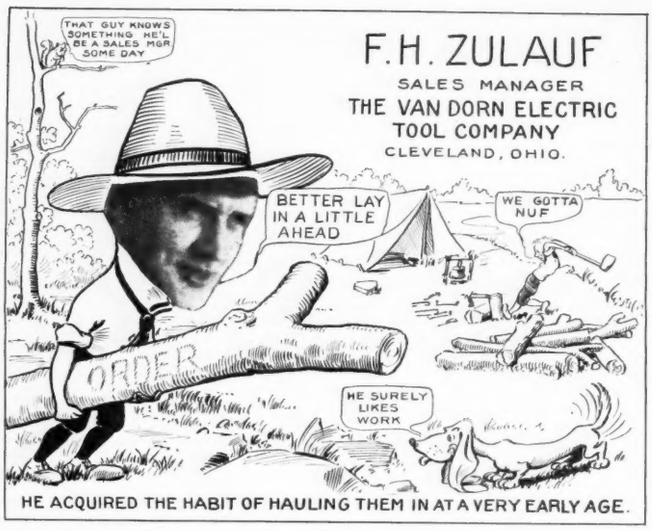
This is designed to fit the Ford chassis and is mounted on frame and subsills, and is made in two sizes. Can racks fit 1 in. above Ford Runabout fenders. Made by H. Bollwerk & Bros., 3103-5 S. Broadway, St. Louis, Mo.

The Defiance Carriage Co., Defiance, O., makes a specialty of building bodies to order for converted Ford cars and light delivery cars.

The Salisbury Wheel and Axle Co., Inc., Jamestown, N. Y., manufactures an axle equipment suitable for cars equipped with pneumatic tires, and having a carrying capacity from 1000 to 1500 lbs.

Make your product pay—advertise in the CCJ

CCJ GALLERY of SALES MANAGERS



F. H. ZULAUF

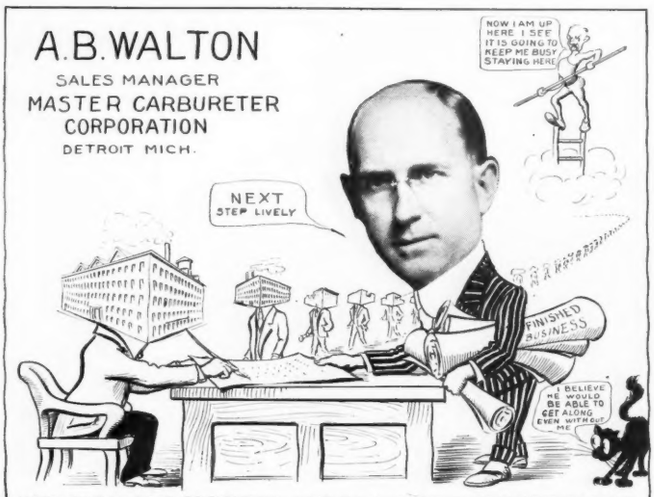
SALES MANAGER
THE VAN DORN ELECTRIC TOOL COMPANY
CLEVELAND, OHIO.

HE ACQUIRED THE HABIT OF HAULING THEM IN AT A VERY EARLY AGE.

LON R. SMITH

SALES MANAGER
THE BUDA COMPANY
HARVEY (CHICAGO SUBURB)
ILLINOIS.

AND HE BRINGS DOWN THE ORDERS JUST AS EASY


NOW I AM UP HERE I SEE IT IS GOING TO KEEP ME BUSY STAYING HERE
NEXT STEP LIVELY
FINISHED BUSINESS
I BELIEVE HE WOULD BE ABLE TO GET ALONG EVEN WITHOUT ME

A. B. WALTON

SALES MANAGER
MASTER CARBURETER CORPORATION
DETROIT MICH.

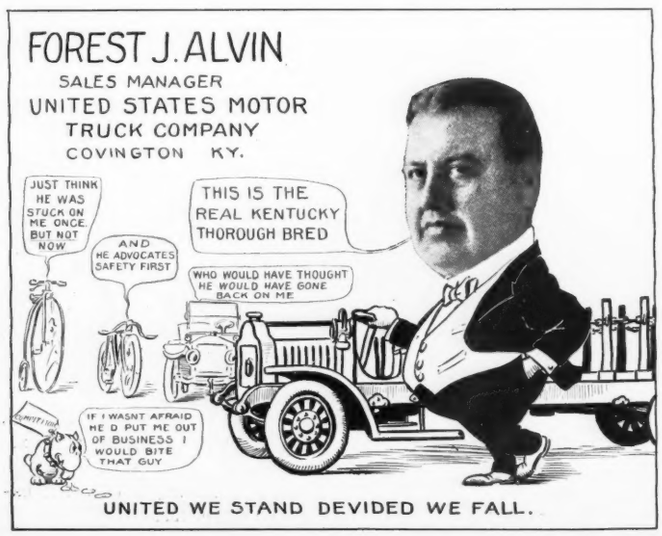
WITH CLOCK LIKE PRECISION DUE TO HIS TRIP HAMMER BLOWS.

OLD BOY MUST HAVE PULLED SOME HEAVY ONES
THINK I'LL GIVE IT UP THEY AINT BITIN
NOW DONT CROWD ILL SEE THAT YOU ALL GET SOME
OOH!-OOOOH!! MR MESSINGER? DONT FORGET MEEE
I WUZ EAR FOIST
WARSHA MATTER WIFF YOU
HUH! ILL HAVE TO GO HOME AND SHAVE IF MY TURN DONT COME SOON
MAMMA WHEN A CALF GETS BIG IS IT A COW
OH DONT BOTHER ME

C. R. MESSINGER

SALES MANAGER
SIVYER STEEL CASTING COMPANY
DETROIT MICH.

WISCONSINS' LAKES ARE NOT THE ONLY PLACES HE LANDS EM.


JUST THINK HE WAS STUCK ON ME ONCE BUT NOT NOW
AND HE ADVOCATES SAFETY FIRST
THIS IS THE REAL KENTUCKY THOROUGH BRED
WHO WOULD HAVE THOUGHT HE WOULD HAVE GONE BACK ON ME
IF I WASNT AFRAID HE D PUT ME OUT OF BUSINESS I WOULD BITE THAT GUY

FOREST J. ALVIN

SALES MANAGER
UNITED STATES MOTOR TRUCK COMPANY
COVINGTON KY.

UNITED WE STAND DEVIDED WE FALL.

ARTHUR C. HITCHCOCK

SALES MANAGER
NEW DEPARTURE MFG. CO.
BRISTOL CONN.

THE COMBINATION THAT GET AWAY WITH THE BIG ONES

For its readers—information; for its advertisers—results. That's the purpose of the CCJ

CHILTON TRACTOR JOURNAL

Why the Farm Tractor is a Good Line for Both the Automobile and Implement Dealer to Handle

(EDITOR'S NOTE.—The following are extracts from a paper by GUY H. HOLL, Secretary of the Kansas City Tractor Club. Mr. Holl knows the tractor situation and is not afraid to state the facts.)

THERE are two features of tractor selling that may seem a handicap to big sales.

The plan of selling to a farmer for cash, and cash only, and the amount of commission allowed you dealers.

First, I am going to discuss the matter of cash sales. I might say right here that there is no disposition on the part of the tractor manufacturers and the tractor distributors to market tractors through any other channel than through dealers, nor to give the dealer a small commission for his work than the work justifies.

Gentlemen, it may seem to you to be flying in the face of destiny to attempt to make sales of tractors on a cash basis. If you will go back just a few years you will remember that the automobile, the wonder industry of the present century, started on a cash basis.

And there were many who saw in the cash sale an insurmountable obstacle to big sales to farmers. Today 75 per cent. of the automobiles are sold to farmers and for cash.

Who are distributing automobiles?

Not the implement dealer, except in a few cases. Other folks whose mental vision was not blinded by the habit of selling to farmers on credit, took up the automobile and have made it pay wonderfully. In almost any town you will find that the blacksmith of yesterday is the prosperous garage owner and automobile dealer of today.

Now, gentlemen, this idea that the farmer will not pay cash for a tractor is a "bugaboo"—a mental hazard. And the most forcible argument that might be presented in form of this statement is the thousands of tractors that are being sold for cash. Take Kansas, the State where many of you live and own a business.

In Kansas alone last year, tractor sales were many, many times larger than the year before. I know that last year tractor companies sold from a dozen up to as many as 800 tractors for cash. Remember that, gentlemen, all sold for cash.

These tractors were sold through dealers, 95 per cent. of them, but in a very few cases only through implement dealers.

On the face of it, it looks as though you would be just swapping dollars selling tractors at 12 to 18 per cent. profit.

As a matter of cold dollars and cents business, it isn't swapping dollars—it is making you money, more money if you please, than you could make on any line you handle, regardless of the apparent per cent. profit such lines may pay.

In figuring net profit you must consider turnover of stock.

However, from information I have received, I would judge that $25,000 is a safe estimate to place on the amount of stock the average dealer has his capital tied up in.

That stock is turned about twice a year—it's an exception, a most noteworthy exception where an implement dealer has gross sales of more than $50,000 with a $25,000 stock.

Now for tractor sales—

To present actual figures, we will use a tractor selling at $700 f.o.b. factory, as an example.

The commission on that tractor we assume to be 18 per cent., which is a safe average—the net cost to you being approximately $595.

A carload, 5 tractors costing you $2,975.

Remember that all you have invested in these tractors is $2,975, your profit on the carload being $525.

With conditions as favorable as they are today, it's a poor dealer who cannot sell at least 5 carloads of tractors.

I might say right here that I know dealers who will sell 100 to 150 tractors this season.

Your gross profits on the 5 carloads of tractors will be $2,625, on an investment of $2,975.

That's the way you have got to look at tractor profits. Tractors are a specialty—not screws, not shovels, not plows.

Tractors are a specialty line—just as automobiles.

A specialty line that required a comparatively small investment—yet pays a total gross profit largely in excess of any staple line.

When you sell a tractor you do not have to take the family and all the relatives, and sometimes the neighbors out for a ride—in fact a good many demonstration rides before the sale is consummated.

There are no rubber tires on a tractor—if you have sold automobiles, you know that every customer has a lot of unpleasant things to say about the tires.

The tractor is a sturdy piece of machinery—intended for rougher service, it has few of the refinements of the automobile—and consequently where there is some trivial thing that seems to be wrong on a tractor, the farmer doesn't come tearing into your store and have you give his machine a complete overhauling.

The tractor business has been referred to on various occasions as the coming business.

Gentlemen, the tractor business is here. All it needs to make it the rival of the automobile business and in fact outdo the automobile business, is for you dealers to awake to the opportunity.

As a matter of fact the tractor business can't wait for anybody—the farmer is demanding tractors, and conditions are such it cannot be held back.

The specialty dealer is going to handle tractors, automobiles, and one or two other lines that sell for cash.

The specialty dealer isn't going to carry a big stock—he isn't going to have a tremendous amount of capital tied up in slow moving merchandise that lies on the shelf waiting for customers.

The specialty dealer is going to skim the cream of the business, and if you don't watch out, all you will have left will be the staples.

We distributors have more at stake, risk more, than you dealers. We are not asking for sympathy—we went into the tractor business with our eyes open.

We know that we must keep our sales up, we must supply this demand or someone else will come along, awake to the opportunity, and take the business from us.

We must distribute tractors and we must distribute them through dealers.

Why is the CCJ the only truck paper a member of the Audit Bureau of Circulations? Here's food for thought

We prefer to sell through men who are established, who are widely known and favorably known—in other words we want to sell through you implement dealers.

If you men do not seem anxious to sell our tractors, if you do not seem willing to get back of our merchandise, then it behooves us to create dealers. And because this has seemed necessary, with the tractor manufacturers and distributors, just as it was with the automobile manufacturers, there has been created a new class of dealers, the specialty dealer, which I previously referred to.

A tractor distributor ran a page advertisement in an implement trade journal last season that created considerable comment.

The Advertisement

"We didn't hire this space to talk tractor to you, or to tell you how good our tractor is, with details of construction, but to talk business.

"We dare say there is not a dealer in this State who would not like to do a larger percentage of cash business. We are satisfied, also, that there are a lot of you that hesitate to ask your customers to pay cash. You are afraid it will drive the trade away. We want to talk about a machine that you can sell on a cash basis. We say you can sell, because we are doing it. We have sold good many tractors for cash, in territories where the dealers said it couldn't be done. The 'Money wasn't in the country,' and yet their customers came right into our city and bought and paid for a tractor and took it home.

"Our terms are cash. We do not sell tractors on consignment or commission. If we cannot sell them for cash, we do not sell them at all.

"The writer was recently in a store where a stock of $60,000 was carried. The volume of business was about $75,000. The dealer was very pleased to get a little more than one 'turn over' of his money each year. He could take $3,500 as a capital, and in the matter of maintaining his stock he could do a $60,000 business with it, on tractors, and have his money, principal, profit and all, in the bank at the end of the year. Don't you think that would make a pretty nice business? All it takes is the courage of your convictions. You are in a position to show him that he gets more for his money than from any other source, and he can afford to go and borrow the money if he has to, and pay interest, rather than pay a premium of hundreds of dollars for time payments.

"Another thing, tractor dealers make money out of their machines. They don't have any losses from bad debts, they don't have a lot of paper to carry.

"We want live, hustling, aggressive dealers. Fighters. That's what we want. Men who know a good thing when they meet it face to face, and then take off their coats and go to it. And say! we don't want any other kind, if we know it. None of this 'Spider-sitting-in-his-den-waiting-for-them-to-come-in.' Go out and get them. Then look at your bank account at the end of the year."

The above advertisement shows that the tractor distributor has an earnest and honest desire to enliven you dealers to a full realization of the possibilities.

Consider the possibilities of the tractor business. It possibly isn't necessary for me or anyone to attempt to tell you of the tremendous future of the tractor business. I'll bet that nine of every ten farmers, the country over, are thinking of a tractor for their farm.

An implement trade journal recently made a poll of its subscribers on the tractor prospects. Returns showed that dealers knew of from 25 to several hundred prospective tractor buyers in their neighborhoods.

Just consider the State of Kansas. There are 277,000 farmers in Kansas. There are only 3000 gas tractors in Kansas—most of them sold last season.

The market hasn't been scathed. In Kansas alone there are millions of dollars of tractor profit for you dealers, now lying dormant, waiting your aggressive action.

The farm papers are full of tractor articles, not because they are trying to force something down the farmer's throat—farm papers publish only articles they know their readers to be intensely interested in. The shrewd minds in the tractor manufacturer organizations invest hundreds of thousands of dollars in tractor advertisements because they know what the farmer is thinking about—tractors.

The farmer is insisting on immediate delivery—once the farmer decides to buy, he wants to buy right then and there, and he wants the tractor delivered the next day.

You can get an audience of 100 to 150 farmers any time you want to put a tractor through its paces.

These farmers attend a demonstration, not from idle curiosity, but because they are tractor hungry.

At your demonstrations you talk to a hundred prospects at one time—you can actually make sales at these demonstrations. Every tractor you sell creates a market for more of your tractors.

I am going to conclude by saying that the tractor manufacturers and the tractor distributors want you to help them sell this enormous market.

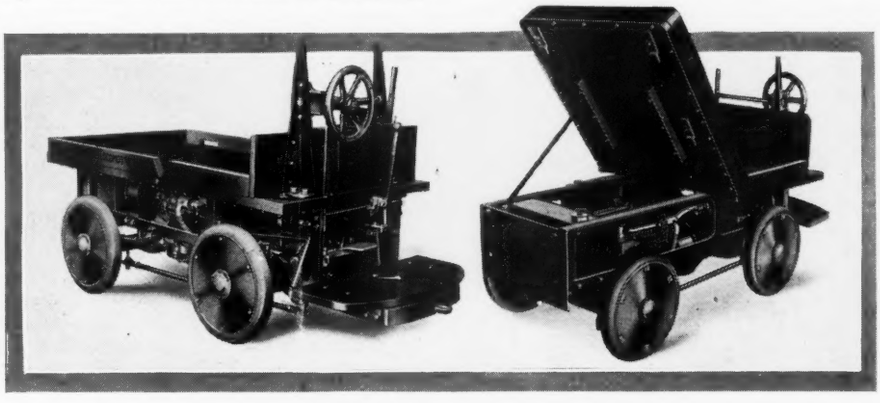
We want your friendship, your support, your co-operation, and in return we will help you to get your rightful portion of the profits that are to be made this year and in many years to come in selling tractors.

The Next Issue Will Contain the BUYERS' INFORMATION COMMERCIAL CAR REVIEW—EASTERN SECTION

A NEW TYPE OF GASOLINE TRUCK-TRACTOR FOR INDUSTRIAL USE

A new type of gasoline truck tractor for which there is every reason to believe there will be a great demand, due to the wide range of uses to which it is adapted, is now being placed on the market by the Milwaukee Locomotive Mfg. Co., of Milwaukee, Wis., pioneer builders of gasoline locomotives. This new type of gasoline truck tractor is operated much the same as an automobile; is equipped with an electric starter and is geared for three speeds of 2.4, 4 and 7.6 m.p.h. forward and one speed at 2 m.p.h. reverse.

The loading platform, which is 31 in. high, 48 in. wide and 78 in. long, is hinged and so designed as to permit of its being easily tilted up at one end, which, together with its open bar steel frame, provides the greatest accessibility to the engine and other working parts. The front axle is of the I-beam type with forged steering knuckles, and both front and rear wheels are equipped with ball bearings throughout. The wheels are of the disc type made of semi-steel and have solid rubber tires.



On the Left is Shown the Model T-10 Truck-Tractor, and on the Right is Shown the Truck With Platform Raised

The motive power is furnished by a four-cylinder, four-cycle vertical engine with cylinders cast in block, 3¾ in. bore by 4¼ in. stroke with removable one piece cylinder head and guaranteed to deliver 10 h.p. to the driving wheels at an engine speed of 1000 r.p.m. The power is transmitted to the driving wheel through a bevel gear type of differential and external gear drive axles. The engine is lubricated by means of the constant level splash system and a plunger circulating pump. The transmission is of the selective type with multiple disc clutch which runs in oil. The engine and transmission form a unit power plant.

Internal expanding brakes act on drums cast integral with the drive wheels and are operated by both a hand lever and the clutch pedal, which automatically sets the brakes when the clutch is released. The springs are of the semi-elliptic type. The cooling system consists of a honeycomb radiator, fan and centrifugal water circulating pump.

Advertising appropriations bring greatest returns when expended in the CCJ

One Tractor on a Hundred-Twenty Acre Farm

Experiences of a New Hampshire Farmer With Small Tractor Show That Versatility of the Tractor is Unlimited

THE experiences of Marcel Theriault, a lawyer-agriculturist, of Nashua, N. H., with his tractor are interesting. Mr. Theriault is one of the many farmers dwelling in that part of the New England states known as the Switzerland of America, and whose abandoned farms have been the subject of many articles in various periodicals during the last decade.

The situation that confronted Mr. Theriault, when he first took possession of his farm, is undoubtedly the same that the majority of farmers have to contend with —the hired labor problem. The scarcity of labor on the farm is today only too well known, and the younger generation, that at one time was satisfied to stick to the old farm, is now turning longing eyes to the big cities, where higher wages and the bright lights are the chief attractions.

These conditions, in connection with the fact that values of farm products have not increased in proportion to the increase in the cost of production, make the problem a serious one for the average farmer.

Mr. Theriault was confronted with this stiuation, although he has many advantages over the ordinary farmer. His place is one and a half miles from the center of a thriving city of 30,000 population, while his buildings all have modern improvements. His farm consists of one hundred and twenty acres of river bottom land, level, and light loam, and free from stones, about 90 acres of which are under cultivation. A beautiful river and a main highway form the boundaries. One of the first things that Mr. Theriault did was to purchase modern machinery, and last, but not least, the kind of power that would produce the best results with his farm implements. He had studied the problem from all sides and found that the modern farm implements in connection with the horse were out of the question, and therefore decided to purchase a tractor. As only ninety acres of his farm were to be cultivated, a small tractor was decided upon, and in consequence an 8-16 Mogul tractor was purchased from the International Harvester Co., of Chicago, Ill.

This tractor was the first to be delivered in this section of the country, and at first created a great deal of criticism, ridicule and curiosity on the part of some of the neighbors. These same men, however, that at first ridiculed, were around the following fall to hire the tractor to fill their silos, and paid handsomely for it.

In speaking of the work which this tractor does, Mr. Theriault says: "We haul heavy loads from the city in a Weber wagon, and we sometimes hitch two wagons, one behind the other, on long hauls. All our light carting back and forth is done with a small motor truck. We saw wood with our tractor, and it's the finest kind of power for a sawing machine. It goes through a green log almost as fast as you can push the log. With a speed that is surprising the tractor will cut corn as fast as it can be fed, big bunches of it at a time."

"We use it on the manure spreader and we can back around with it under the barn as easily and as nicely as the finest pair of horses that ever wore a shoe. We use it for plowing, of course. We can plow as deep as we want to go, turning over about 30 in. at a time. The tractor starts early in the morning, doesn't have to stop for dinner; is not bothered with flies; never steps over a trace, and needs the attention of but one man for plowing. In such land as we are operating, our tractor plows about four and a half acres in ten hours. The best we ever did with horses was an acre in the same time. When the sod grows hard in a heavy loam, or on strong witchgrass sod, of which there is a great deal in this section, we could not stick the nose of the plow into the ground more than 5 or 6 in. when plowing with horses; with the tractor we go right down to the subsoil.

"I had about a mile and a half of old pasture fence to take down last summer, and anybody who has pulled fence posts will agree with me that it is about as disagreeable a job as one can find. In pulling a fence post it always seems to me that the men who built that fence put the larg-

Hauling in Fence Posts and the Winter Supply of Wood From the Timber Becomes an Easy Job

On the Left is Shown the Tractor Doing Heavy Duty on Farm Land. The Illustration on the Right Shows How Easily a Big Log is Snaked to the Wood Lot

Interesting and helpful information; reputable advertisements—that's the CCJ

est end of the post in the ground. With the tractor we can snake out about a mile of fence posts almost as fast as you can walk along; we just throw a chain around the post and snake it out, then go to the next one, throw the chain 'round it and snake that out and keep agoing.

Mile of Fence Posts Can be Snaked Out Almost as Fast as You Can Walk Along

"Another job for which we found the tractor quite convenient was pulling stumps, and pulling down small trees that are in the way. We tie a rope about six feet from the ground around a pine tree about 6 in. in diameter and snake the tree right out, roots and all. We had a large elm tree that measured about 5 ft. across the stump which had been damaged by fire, so that it became necessary to take it down. This tree, with its giant branches, stood between the house and our garage and tool house, and those big branches were hanging over both buildings. If one of them came down on either roof it would do great damage. It would take four men five days to take that tree down by cutting off a little at a time.

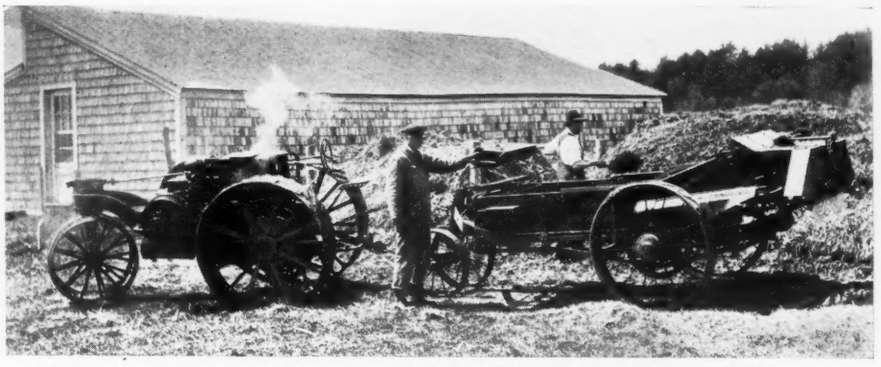
Tractor Trims Tree in Record Time

"We decided to use the tractor. Climbing almost to the top of one of these big branches that was hanging over a building, we tied a rope to it and put the tractor in a place where it would pull in the right direction. Then we would notch the limb right near the trunk of the tree —some of these limbs were over 50 ft. long—and when we thought we had it sufficiently notched we would start the machine, and it would pull that branch right down where we wanted it. Two men took that whole tree down with the exception of a butt about 12 ft. high, in four hours.

"I almost forgot to say that we use the tractor for filling the ice house.

Where Horses Would Mire

"One thing which I thought the tractor could not be used for was working in a meadow in soft land, but, much to my surprise, we have been able to do all our work in land where horses would mire. In some places there was 2 in. of water in the furrow that we were ploughing and water would shoot up through the wheels of the tractor. For this kind of work, we use angle lugs on the wheels, otherwise the wheels slip. We use those lugs on nearly every kind of work on the farm because they give the machine a better grip.



Using the Tractor to Haul the Fertilizer Distributor

"When haying time comes, we use it for mowing and for raking with a side-delivery rake.

"When the hay is in windrows we hitch the tractor to a Weber wagon with a hay loader behind and we can put on a load of hay just as fast as two big, husky Frenchmen can place it on the load. Sometimes we have to stop to give them a chance to catch their breath and dig themselves out of the hay that has piled on top of them.

Tractor a Safe, Economical Investment

"I can see where there is room for great improvement in tractors, but I believe that they have now reached the step where they are a safe and economical investment for any man who has a farm on which a tractor can be used. It does so much work in so short a time. That is the feature that appeals to me particularly.

"We have found that to run that machine ten hours, not taking into consideration, of course, the depreciation and the repairs which it will need from time to time, that it costs about $1.40. It is much cheaper than horses no matter how you figure it, unless a man is in a locality where he can raise all his grain and hay, and has no market for either. These localities, at least in this section of the country, are few and far between.

"I believe that when farmers wake up to the advantage of modern machines, local organizations, and business system they will begin not only to produce profits for themselves, but they will revolutionize the agriculture of our country. When that time comes we shall not have so many abandoned farms, and instead of the farmer's boy seeking the bright lights of the city, the city boy will be begging for an opportunity to share in the healthy, independent, honest and profitable business of agriculture. The tractor will aid greatly in bringing about this condition."

At Work on a Large Wood Pile, Which It Will Quickly Dispose of

NAMES OF TRACTORS WITH CATERPILLAR TREADS

To the Editor:

Am interested in motor truck and tractor business. Would you be so kind as to furnish me with addresses of firms manufacturing tractors and trucks with caterpillar truck tread?—J. D. Shishkin, New York City.

We do not know of any trucks with caterpillar tread. However, there are a number of tractors with such treads, the makers of which are as follows:

C. L. Best Gas Traction Co., Oakland, Cal.
Buckeye Mfg. Co., Anderson, Ind.
Bullock Tractor Co., Chicago, Ill.
Commonwealth Tractor Co., Kansas City, Mo.
Dayton-Dick Co., Quincy, Ill.
Holt Mfg. Co., Peoria, Ill.
Joliet Oil Tractor Co., Joliet, Ill.
Killen-Strait Mfg. Co., Appleton, Wis.
Sullivan Tractor Co., Oakland, Cal.
Tom Thumb Tractor Co., Minneapolis, Minn.

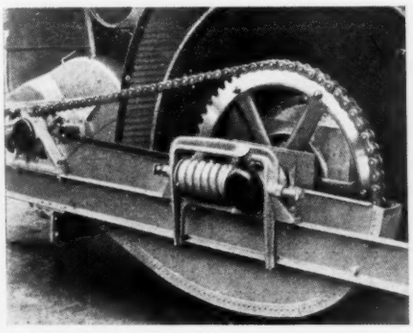
The CHILTON ideal—honest circulation; results to advertisers—fully exemplified in the CCJ

THE GRAY FARM TRACTOR

FEATURING the wide drive drum of its latest model, the Gray Tractor Mfg. Co., of Minneapolis, Minn., announces the Gray Tractor, an all-purpose farm power machine for all season work on moderate and large sized farms. The improvements on the new model over the previous model are not numerous or of much importance, being in reality refinements of the principles and designs used for several years. The features of this machine are its wide drive drum; the four-cylinder Waukesha engine set crosswise; the two-speed forward and reverse transmission; enclosed roller chain drive, spring mounted to prevent injury or strain to the machine due to any jerk in starting and to provide chain tension; short turning qualities (22 ft. inside diameter); the frame constructed on the three-point suspension basis; simplicity of the drawbar construction, and the Hyatt roller bearing equipped transmission.

The Wide Drive Drum

The wide drive drum feature of this Gray Tractor is 5 ft. wide, and equipped with cones or cleats. No differential gear is needed, thus there is less loss of power through friction. The wide drive drum also makes possible the three-point suspension frame, so important in traveling over the uneven ground surface. It is driven from the jackshaft by two chains, one on either side, Diamond make, roller type.



Gray Tractor Chain Drive

Upper portion of chain enclosure is removed, disclosing chain drive. Spring to provide chain tension and absorb starting jerks is also shown.

The transmission connecting engine and jackshaft has six spur gears with shafts mounted on roller bearings, compactly mounted in an oiltight transmission case.

Spring-Mounted Chain Drive

The heavy duty Diamond roller chain is enclosed, protecting it from dust, dirt and grit, and runs in an oil bath. It is driven by hardened steel sprockets on the jackshaft, and runs on cut steel sprockets on the drive hubs.

The engine is a Waukesha, heavy duty, four-cylinder tractor type. It is accessible, powerful and simple. Nickel chrome steel and other special steel for strength and aluminum for lightness are used in it. Cylinders are cast in pairs of semi-steel. The engine is fitted with a Waukesha governor, K. W. high tension magneto, Bennett carburetor with Bennett air cleaner. The radiator is a large copper cored Purfex. The fan and pulley are one piece, made of aluminum, mounted on ball bearings.

The clutch is Raybestos faced cone type.

Belt Power

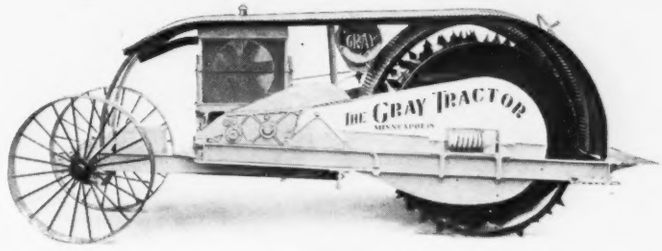
The engine delivers its power to the belt pulley direct, without the use of gears, the shaft being mounted on roller bearings. The clutch controls it. Interposed between the clutch and pulley is a flexible drive coupling, making impossible the communication of any strain from the pulley to the engine.

The Gray Tractor has a structural steel frame so riveted and braced that it is virtually one piece. It is claimed to have no give and that it is impossible for vibration to be set up within the frame itself.

Gray Tractor design gives you a high grade, efficient machine that will plow on solid land or loose stubble land, harrow and disc over newly plowed fields without danger of packing the soil, that can be used to drill in your crop, and after the grain is up, to drag or harrow the young crop. At harvest time it furnishes an even, steady power that can work straight through the heat of the day in pulling binders. In addition to this, it is always ready to hitch on to belt work at any time of the year, and furnishes a steady power that can be started instantly.

The drum, together with the two front wheels, roll a strip 80 in. wide, the entire width of the tractor. This is rolled but once and the light weight of the tractor is evenly distributed over its wide surface.

Where packers are used in preparing the seed bed, the Gray Tractor can be used advantageously. Its wide drive drum and front wheels, rolling the strip as they do, have the same effect on the seed bed as does a packer. Because of this it is possible to hitch an 8 ft. packer from each of the Gray Tractor harrowing arms so that the machine and the two packers roll a strip 23 ft. wide, the packers themselves rolling 16 ft., and the tractor rolling the rest.



The Gray Tractor

Operated from the right rear end. It stands six feet high. Note the underslung frame, enclosed chain drive.

Gray Tractor a One-Man Machine

The Gray Tractor harrowing arms make it a one-man general farm tractor. Implements may be hitched to these arms and operate to the side of the tractor, and in conjunction with the tools following. For instance, one 8 ft. packer may be hitched to each harrowing arm of a Gray Tractor and a 26-ft. drag from the draw-bar. Each packer will then roll a space 8 ft. wide and the tractor itself, by means of the two front wheels and wide drive drum, will roll the intervening space. Behind the tractor, the 26 ft. harrow will properly drag the entire surface rolled, making it a firm, smooth seed bed with a loose dust mulch on top. This equipment will roll and harrow sixty acres in a ten-hour working day.

This tractor is well adapted to road work. The wide drive drum can be weighted whenever necessary. Having no differential, side draft does not affect it and graders or road machinery may be hitched to the extreme corners of the tractor frame. This machine is useful in leveling and rolling as well as building roads.

Gray Tractor Doing Heavy Duty in the Farm Lands

Everybody who is anybody in the truck industry reads the CCJ

TRAILER DEPARTMENT

Tons of Milk Hauled by Trailers and Tractors

Speed in Handling This Commodity a Prime Feature. Extra Trailers Keep Tractor Busy Continuously

By C. P. SHATTUCK

THE average person consuming milk refers to this commodity in terms of pints and quarts in New York City, the inhabitants of which use vast quantities. Not so with the Borden Condensed Milk Co., which concern ranks among the leaders in the milk industry and which daily hauls tons and tons of the lacteal fluid in semi-trailers drawn by tractors. When it is considered that each trailer has a capacity of 10 tons, that the company has in service 37 tractors, and that many of these make several trips both day and night, some idea may be obtained of the transportation problem that has been solved by this concern by the use of tractors.

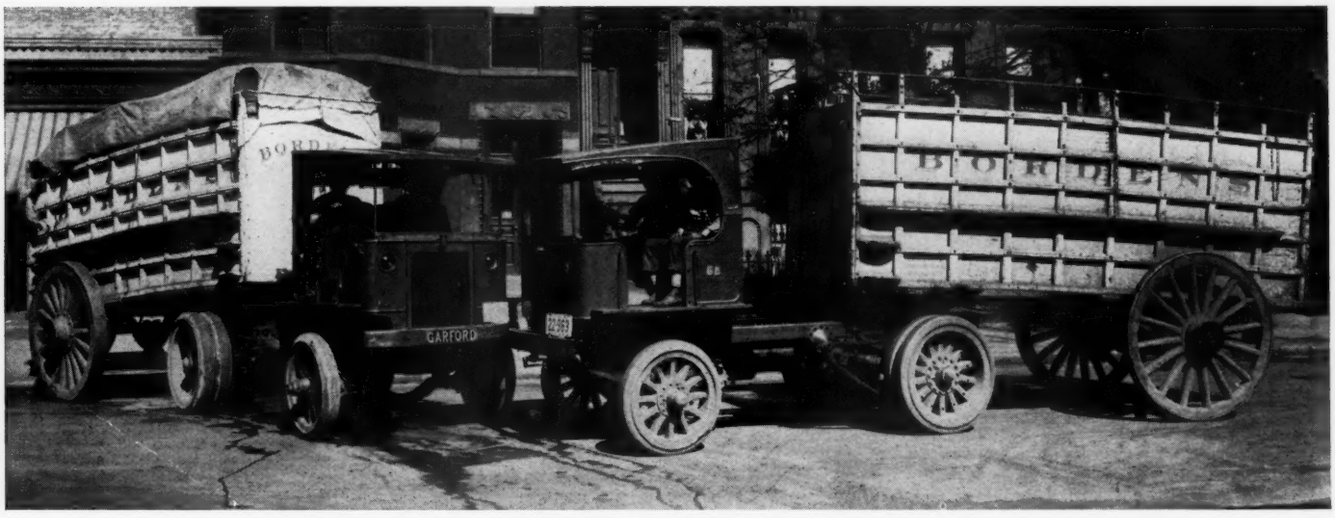
The bulk of the milk is collected at the freight terminals at Jersey City and transported to the pasteurizing plants in Brooklyn, Manhattan and Long Island City, the plants being so distributed as to cover a large territory. With the exception of what is known as Grade A, which is shipped bottled and in cases, all milk is pasteurized before being hauled to the delivery depots from which it is distributed.

As the margin of profit on milk is stated to be very small, transportation costs must necessarily be reduced to a minimum. Owing to the fact that the laws regulating the handling and sale of milk limit the hours it can be held and sold as milk, and the fact that variable temperatures have to be guarded against in handling and transportation, it was but logical that the motor truck would best meet these peculiar requirements.

The ordinary truck with a special body was not adaptable as its capacity was not sufficient, and an investigation showed that the idle time of the machines and the men were practically the same as with the horse-drawn equipment. It was found that the largest economy would result by the use of tractors of 5-ton capacity and by the employment of a special semi-trailer body, one that could be attached to a tractor or hauled by horses with a minimum loss of time.

Under the supervision of E. B. Clark, superintendent of transportation, there was constructed in the shops of the company a solid panel type of body having a capacity of 22,000 lbs. It was made interchangeable; that is, the front wheels and gear of the horse-drawn equipment can replace the tractor if necessary and in equally as quick a time. The platform and fifth wheel utilized with the tractor are designs originated and perfected in the shop of the company, and one of the features of the trailer is the use of cast iron boxes in place of bronze members. The boxes are lubricated by a McGuire oiler, require a renewal of the supply of lubricant about every two weeks, and Mr. Clark states they have yet to experience a hot box. The trailer has an overall height of 11 ft. from the ground, is 8 ft. 3 in., hub to hub, is equipped with 5 ft. wheels shod with 6 x 1½ in. steel.

The first tractors, Knox, were placed in service in February, 1914, and from June to September inclusive of the present year, seven 5-ton Garford tractors were added. The total number of trailers in service to date is 120, all of which were built, ironed and painted in the Borden shop, which also turns out its horse-drawn vehicles, harness, etc., and maintains a large garage and repair shop.



Garford Tractors With Trailers, in Milk Service

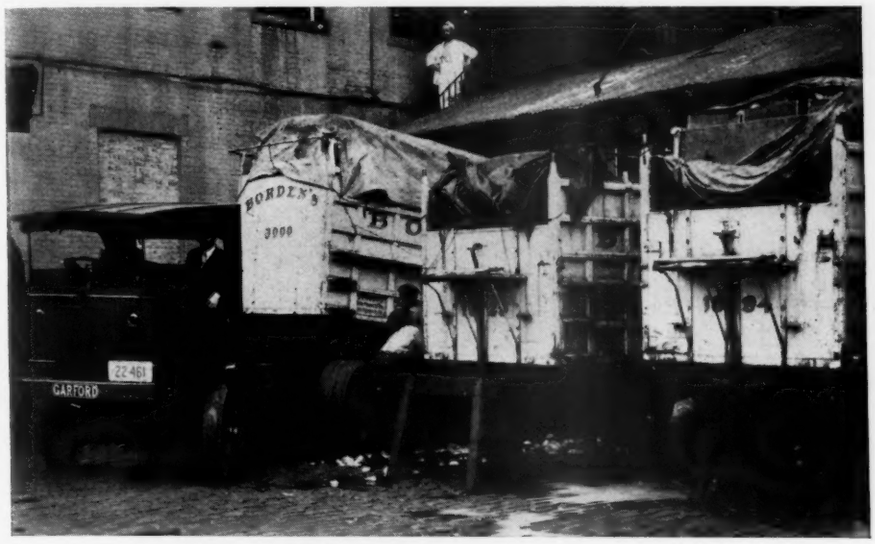
The Borden Condensed Milk Company employs a large number of tractors and trailers, and finds that each unit replaces fifteen horses or three teams

Plenty of the right kind of circulation means quantity results to advertisers in the CCJ

Of the 37 tractors in service, 23 supply the pasteurizing plants at Brooklyn, Long Island City and Park Ave. and 180th St., Manhattan, 13 being required by the Brooklyn plant and five each for New York and Long Island. These tractors are used night and day, and average about 75 miles daily. From 9.30 a. m. to 11.30 p. m. they haul milk from the railroad terminals at Jersey City to the pasteurizing plants, also make two night trips to Brooklyn. The trailers are also utilized to supply the branches or delivery depots with the pasteurized and bottled milk, and are frequently called upon to make special trips.

The use of tractors with trailers early demonstrated their economy, economy made possible by the fact that the tractor could be kept moving with no time lost other than that occasioned when making delivery and changing from the empty to the loaded trailer, which is said to be accomplished in about 5 minutes by the use of jacks for raising and lowering the body. The crew of each tractor consists of two men, a driver and a trailer man, the latter taking care of the unloading in which he is assisted by the operator. With the Borden method the tractor does not have to wait upon its return from a delivery for a trailer, for the latter is not only loaded, but the milk is iced. Variable temperatures, which must be guarded against in the transportation of milk, are prevented by the use of the ice and a felt and canvas pad. The platforms from which the milk is loaded make for economy of time and labor and it is rare that two or more loaded trailers are not in readiness for the tractors—so efficient is the system.

Having an experience in the transportation of milk both by horse-drawn and motor equipment, one extending over a period of several years, Mr. Clark is amply qualified to make a comparison of the two methods. Figures carefully compiled show that the investment is considerably less with tractors, and that the delivery costs are also less than with horses. Unfortunately the company will not give out data as to costs, but it was stated that one tractor accomplishes the work of 15 horses, or in other words, does the work of three teams, which consist of four horses and a spare animal. Where one team was used to make a night trip, the tractor makes two, and accomplishes more trips daily. The saving to the company is obvious.



Trailers Solve Milk Transportation Problem
Showing how time is economized by the use of trailers and keeping the tractor busy with deliveries. The Borden Company has 120 of these trailers

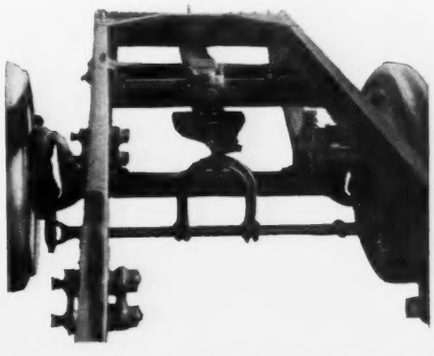
WARNER TRAILERS IN FIVE MODELS

A RECENT announcement by the Warner Mfg. Co., of Beloit, Wis., builder of the Warner Prairie Schooner, discloses five new trailer models of heavy duty four-wheel type equipped with improvements unique in trailer use. Several special features which have been worked out are the cushion draw bar; the steering and locking device, and the corner brackets for pulling out anywhere.

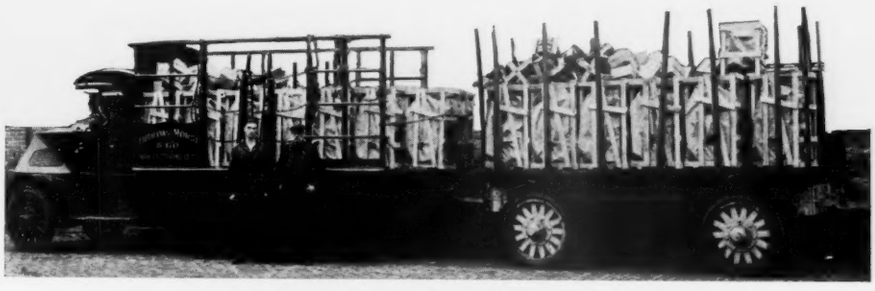
The five new models have capacities as follows: 1½, 2½, 5 tons, 4-yd., and 7 tons, the 4-yd. being dumping type. All models are complete with draw bar and attachment for trucks, thus obtaining proper hitching for all makes of motor trucks. These new draw bars are hitched with a one-man operation, the coupling being automatic.

The cushion draw bar was designed to relieve the clutch of the truck when starting a load and accomplishes its work to a nicety. This has been found to be a necessity. In one of the accompanying illustrations is clearly shown the arrangement to permit the draw bar to be attached to any corner of the trailer when the latter is in a difficult position.

A big feature of the Warner Auto-Trailer is the steering device. This is shown in an illustration herewith. Attached to the tie rod is a yoke with a ball joint at the top which connects with another yoke. This second yoke is pinned horizontally to the coupling which is pivoted to a cross frame member, the pinning of the second yoke permitting changing of the relative positions of axle and frame without affecting the steering. This, it will readily be seen, not only permits carrying of heavy or light loads but also allows for spring action, still keeping the wheels in perfect alignment and eliminating all "whipping."



Five-Ton Warner Trailer Steering Device
This steering device was worked out so that wheels are always in perfect alignment, regardless of heavy tonnage, which flattens springs. The way this steering device is arranged will relieve the trailer from any "whipping" motion.



New Five-Ton Warner Trailer Attached to Mack Truck
In the service of Fairbanks, Morse & Company, of Beloit

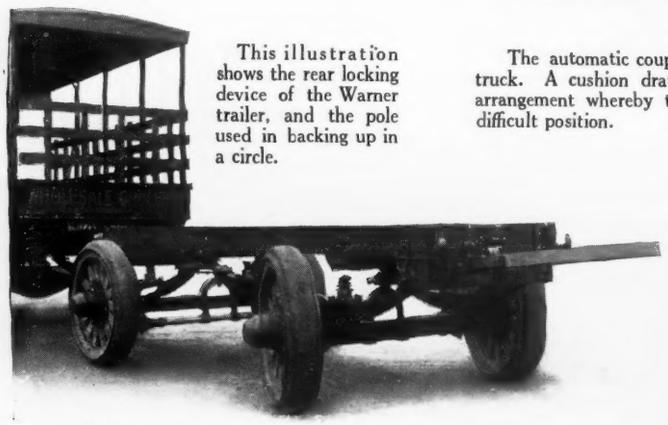
Specifications of the five models are as follows:

One and One-Half Ton

Capacity (live load).....3000 lbs.
Track .....64 in.
Length of frame .....12 ft.
Construction of frame,
5 in. channel, 6½ lbs. per ft.
Axles .....Drop forged steel
Axle springs,
2½ x 48 in.—deflection per in., 464 lbs.
Tires .....3 in. rubber
Wheels .....36 in. Bower bearings
Price, without body $875

Two and One-Half Ton

Capacity (live load).....5000 lbs.
Track .....64 in.
Length of frame .....12 ft.
Construction of frame,
5 in. channel, 6½ lbs. per ft.
Axles .....Drop forged steel
Axle springs,
3 x 48 in.—deflection per in., 617 lbs.
Tires .....4 in. rubber
Wheels .....36 in. Bower bearings
Price, without body $875



This illustration shows the rear locking device of the Warner trailer, and the pole used in backing up in a circle.

Five Ton

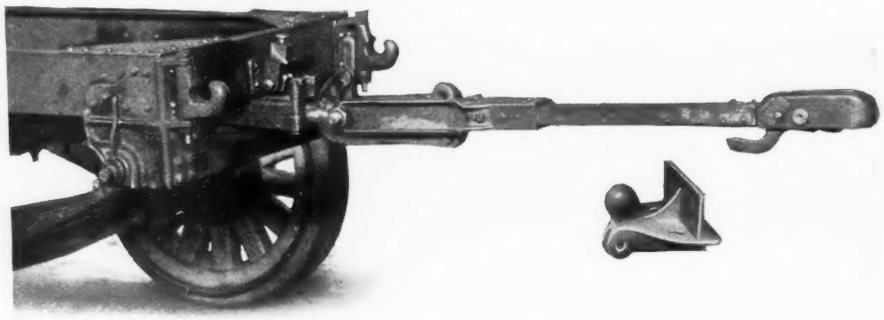
Capacity (live load).....10,000 lbs.
Track .....64 in.
Length of frame .....12 ft.
Construction of frame,
5 in. channel, 9 lbs. per ft.
Axles .....Drop forged steel
Axle springs,
3 x 48 in.—deflection per in., 907 lbs.
Tires .....6 in. rubber
Wheels .....36 in. Bower bearings
Price, without body.....$1295

Four Yard Dumping Type

Frame .....7 in. channel iron
Track .....56 in.
Price, without body $1350

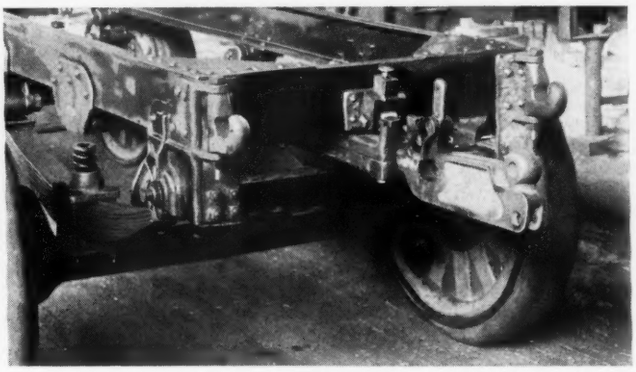
Seven Ton

Capacity (live load) .....14,000 lbs.
Track .....56 in.
Length of frame .....12 ft. 6 in.
Construction of frame,
6 in. channel, 10½ lbs. per ft.
Axles .....Drop forged steel
Axle springs,
3½ x 48 in.—deflection per inch, 1123 lbs.
Tires .....7 in. rubber
Wheels .....36 in. Bower bearings
Price, without body $1485



Warner Trailer Coupling

The automatic coupling complete, including the portion shown at the right, which is attached to the truck. A cushion drawbar is used to relieve the clutch of the truck when starting a load. Note the arrangement whereby the truck can hitch on the corner of the frame and pull the trailer out of a difficult position.



A close view of the trailer portion of the automatic coupling as used on the Warner trailer.

The Warner Convertible Pole Trailer

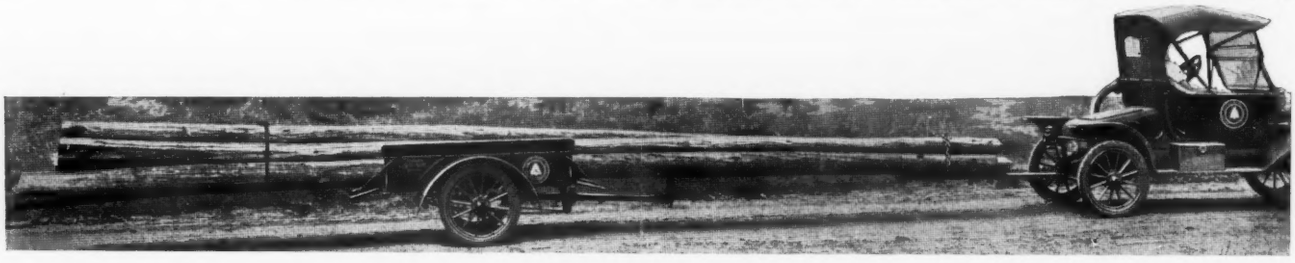
This type of trailer, in much demand by telephone, telegraph, light and power companies, has a special pole coupling which is quickly detachable and the trailer attached in the usual manner, thereby making it useful in hauling equipment, such as cross arms tools, men, freight, etc. When thus loaded it can travel at a speed of 40 m.p.h.

This trailer has a capacity of 1250 lbs. and will carry poles as long as 50 ft. With the trailer is supplied any one of the three kinds of hitches, the pole draw bar, and ball chain couplings. The illustration shows the trailer with several poles, hitched to a Ford runabout.

The Warner Steel Draw Bar is attached to the axle of the trailer. The front sill of the trailer is supported on the Warner Draw Bar by means of a semi-elliptic automobile spring. This construction in conjunction with the side springs floats the trailer body in relation to the trailer wheels.

General details are as follows: Tires, 30 x 3 in. pneumatic; chrome vanadium steel axle; ball bearings; hitch for any type of car; adjustable steel draw bar for leveling body; ball chain coupling; pole draw bar with feed hooks and quick acting chain tighteners; two binding chains; inside body dimensions, 43 x 68 in., sides 12 in. with 8 in. flareboards; price completely equipped, $125. Wheels and bearings are the same size and type as those used on the Ford car and are interchangeable with Ford car front wheels.

A 1500-lb. capacity trailer with 30 x 3½ in. tires, demountable rims and Bower or Bock roller bearings sells for $150, equipped.



The Warner Convertible Pole Trailer

Shown herewith, loaded and attached to the rear of a Ford car. Inside body dimensions are 43 x 68 in., but the trailer will haul poles 50 ft. long. The price is $125, fully equipped

The CCJ is built upon the lasting foundation of honest circulation

Special Bodies For Trucks in Big Demand

What the Commercial Car Purchaser Thinks of "Fancy Bodies." Is There a Real Market for Striking, Flashy Cars?

THE humorous cartoon accompanying this article may be seen exaggerated to the men who are familiar with all the ins and outs of the commercial car market, but it cannot be denied that there are in every city and town of any size merchants who would willingly purchase a striking, fantastic body for their delivery wagons, provided they could get one for a reasonable amount of money and would not have to wait too long for its delivery. The greatest drawback at the present time to a more general use of special bodies for merchants' deliveries is the difficulty connected with its designing and delivery.

In an endeavor to sound the possibilities for a factory which would make a specialty of "fancy bodies" to suit any demand, and which would continually design novel and striking bodies to be placed on any chassis, the writer interviewed a large number of dealers in New York and Newark, N. J., who at present are using motor delivery wagons of the standard type of body. Strange to say, he found an unusually active demand for such bodies.

Take, for instance, Gialanella Brothers, of Newark, dealers in poultry and meats. When the cartoon was shown to the head of the firm he studied it carefully and then said: "That's fine! Where can I get a hen automobile? It would be the best advertisement yet! Me for one of those cars!" And he seemed greatly disappointed when he heard that the body was just an idea, and a humorous idea at that.

His brother, who runs a meat and sausage shop in another part of the city, was present when the cartoon was examined. He fancied the truck with the "hog" body. "Great Scott!" he exclaimed, when he saw the cars in the picture; "if I could get a delivery car like that, I wouldn't need to advertise in the Newark papers at all. Inside of a week everybody in this part of the town would know my delivery wagon a block away, and all the kids from two miles around would come to buy at my store, just to see the car. Why don't somebody get busy and build me one like that. How much would it cost?"

An undertaker, who happened to be the next victim of my interviewing trip, seemed highly insulted when the idea was suggested to him that he might perhaps be interested in a special body, formed like a casket. "Sir!" he said, in a tone that made your back feel as if a dozen icicles were sliding down from your neck into your stockings, "I think you had better interview the Necker establishment, three blocks away; they believe in advertising the comforts of up-to-date funerals!"

Unfortunately, Mr. Necker had just died the previous day, and the subject of fancy casket funeral cars seemed a somewhat sore subject. The "establishment" will be interviewed some other day.

Rose-Shaped Body to the Florist

A florist, who was next on my list, seemed very much interested in the idea. "Do you suppose," he asked, "I could get a rose-shaped, rose-colored delivery body put on my Ford chassis? The old body looks pretty shabby, but the car runs fine and I hate to part with it. I wish someone would turn out a rose-shaped body for a Ford car—he ought to sell a thousand or more to florists all over the country. The first man in each city or town would get this body, and no other florist in it ought to be allowed to duplicate it. Let the others take lilies or orchids or something else; there should not be two of similar shape in one town."

This is an aspect of the special body question which certainly requires careful study. From the viewpoint of the commercial car user, the advertising value of his fancy car depends chiefly on the uniqueness of the body; as long as he is the only one in that line of business to have such a car, his delivery vehicle will be readily recognized and be a valuable asset to him. The moment, however, another man is permitted to imitate the shape and color of his own car, the advertising value not only is lost, but a large share of the good-will created by the striking body design is turned over to the competitor.

Should Copyright the Body Designs

It is possible, of course, in case a body-building company should undertake this kind of work on a large scale, to design striking bodies and to protect the design by a trademark or copyright proceeding. As soon as one of these bodies is sold in

Dutch Wooden Shoe Used to Advertise "Dutch Masters" Cigars.

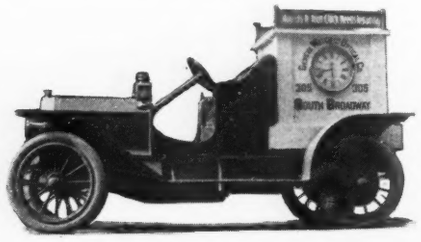
On the Left is a Unique Body With Giant's Head and a Five-Foot Cigar, Smoke Being Made to Issue From the Giant's Mouth and the Cigar End.

The Philadelphia Evening Ledger Newspaper's Camera Body is Shown to the Right.

Make your product pay—advertise in the CCJ

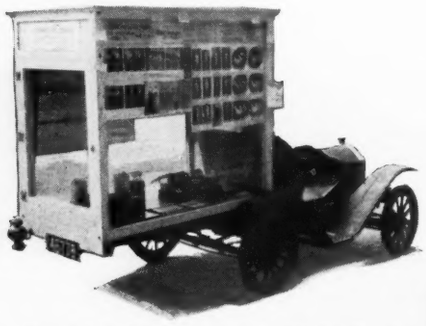
any one town, the company would refuse to sell another like it in the same town or the immediate neighborhood. Other men in the same line of business in the same town would be compelled to choose a different type of body sufficiently distinctive not to encroach on the advertising value of the others.

Manufacturers of trademarked articles have for many years employed delivery bodies of striking shape, but the retail merchant has avoided the field for some reason or other. The most possible reason was suggested by a fish dealer who was the next victim on my list.



Clockmaker's Delivery Body

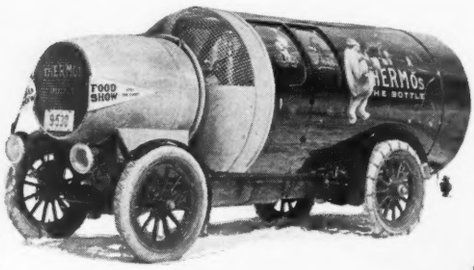
"What I think of the idea?" he asked, when I put the question up to him. "Well, I'll tell you one thing and that is—I have been trying for three months to get something like that body, but I couldn't. I tried to interest a body builder in the idea but he wouldn't even listen to me. His price for the design and the building was higher than a whole new car with chassis and all would cost, and I can't afford it at present. Besides, he told me I'd have to pay at least half of the purchase money down, and I'd have to wait two months for the car. I don't like to do business under such conditions. If you can show me where I can buy a fancy body, something like the drawing in the cartoon, for $350 to $400, to be delivered in reasonable time, I'll sign a check right now."



How a Los Angeles Dealer in Health Foods Uses a Glass Showcase Body

The fish dealer's experience was repeated twice in the course of my round among the Newark dealers. A hat store, which controls six retail stores in the city, had made inquiries at a well-known body-building plant in Newark, and had been told that a body of such special design would cost at least $750. Another store, dealing in pianos, wanted a huge furniture truck body built, to be put on a two-ton chassis for moving pianos and furniture, and the price asked was $1400—an exorbitant sum, in the opinion of the dealer. In both cases the idea was dropped after the price was learned. These dealers did not have the large advertising appropriation which manufacturers and wholesalers, as well as department stores, set aside, and an expense of $750 or $1400 for a truck body was more than they could conscientiously afford. The hat store is using a Ford delivery wagon, but would change to a special "hat-shaped" body the moment the owner could buy one for $300, or thereabouts.

The shoe-shaped body, shown in one of the accompanying illustrations, is not exactly a new idea, the Regal Shoe Co., in New York, having used a car of that shape for some time in its delivery of shoes from the main warehouse to the branch stores. But in this case it was solely a factory scheme for advertising on the streets, while in the retail business the dealer expects the best results from neighbors seeing the delivery wagon stop at a customer's house, particularly where the customer is well-known and looked up to by his neighbors. If a delivery car of such striking shape should stop in front of his home, the entire neighborhood would be interested in the store which owned the car, and which had Mr. Blank as a customer.



Car Fitted With Thermos Bottle Body

On the Right is a Federal Tire Distributor's Service Car Which Furnishes Free Air.

In New York City and Brooklyn the chances of special body designs for commercial cars are even brighter than in Newark. A short canvass of the possibilities have convinced the writer that several hundred such bodies would be sold within a month after the news got around that they could be obtained under the conditions outlined above. For instance:

A fur dealer on Sixth Avenue wanted a body shaped like one of the large fur-bearing animals, preferably a bear or tiger.

A florist on Fifth Avenue liked the idea of a delivery car shaped like an Easter lily.

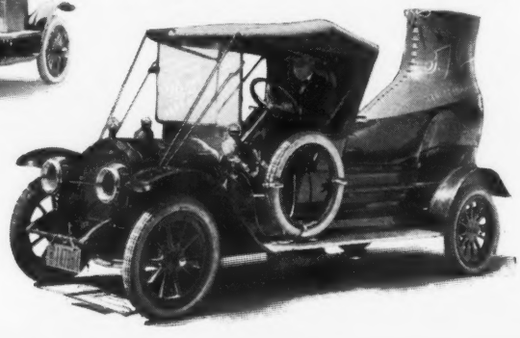
A well-known fruit shop, which makes a specialty of steamer baskets and other fruit baskets, welcomed the idea of a body in the shape of a fruit basket, or, if that should be too difficult to design and build, one in the shape of a large apple or pear.

A leather goods store on 42d Street thought well of a delivery car shaped like a dress-suit case, or steamer trunk, and wanted quotations on such a design.

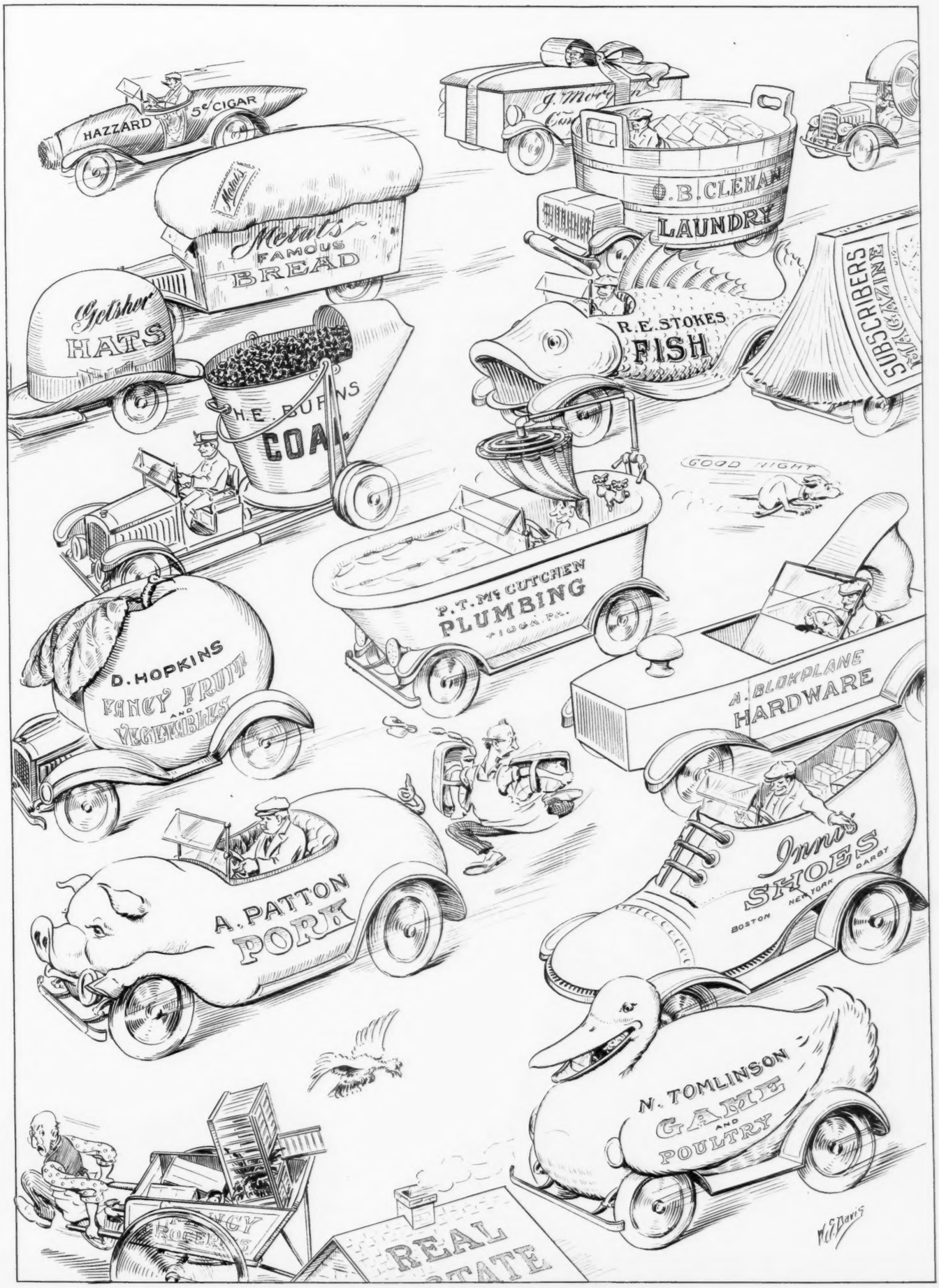
A rug dealer, who makes a specialty of Persian and other Oriental rugs, was enthusiastic when he saw the cartoon. "By George!" he exclaimed, "I don't have to get a specially built body, but you may bet your last dollar I'm going to have my black delivery car repainted—in imitation of one of my best rugs. I'll have a painter color the top and sides, so that it looks from the windows and the sidewalks as if a big rug had been thrown over the car. That's a good idea, and I'm going to do it right away! Much obliged for the tip!"

The rest of the journey among the stores may be summarized in a few words. Where a motor delivery was being used, and where the store was not too "exclusive"—that it to say, where it carried the name and address of the dealer in fairly large letters on the sides—the idea of specially-shaped bodies met with distinct ap-

A Clothing Store on Wheels



How a Philadelphia Shoe Merchant Makes a Body do Double Duty

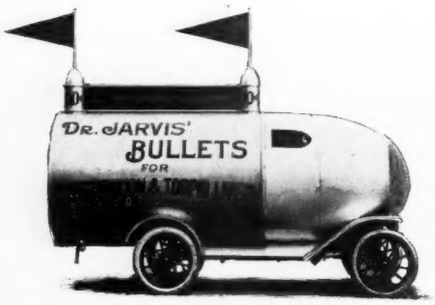


OUR ARTIST'S CONCEPTION OF SPECIAL BODIES

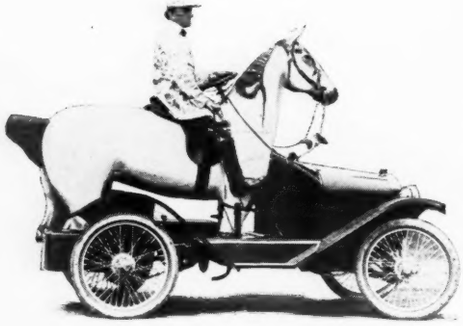
Why is the CCJ the only truck paper a member of the Audit Bureau of Circulations? Here's food for thought

proval. Where the store was of the kind that eschew glaring advertisements the suggestion, of course, received little encouragement.

However, from a personal investigation of some fifty retail stores using motor delivery, the writer can state emphatically that special bodies for delivery cars would meet with instant success among that class of merchants depending upon and utilizing street advertising possibilities. Especially interested were dealers whose customers live in the suburbs. The only sensible objection from a retail dealer, aside from those given by the "conservative" and exclusive stores, was the one supplied by a jewelry firm on Broadway. "We use a motor delivery car because the trip can be made faster, there is less delay and less chance for hold-ups or thefts because of the fast driving. If we use an advertising body like those suggested, we would have to drive the car slower in order to give the people on the streets a chance to read our name and address. And we don't deliver very far in the suburbs—we ship goods by express and let someone else do the worrying!" With this firm it was the reduced speed with which the special body car would be driven that struck them as important.



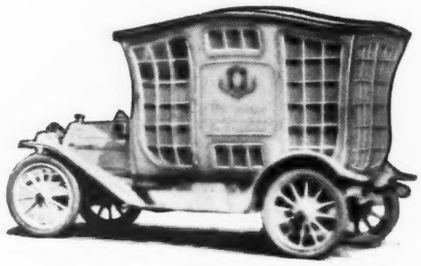
This Body Does Not Advertise a Powder Manufactory



Advertisement For a Popular Drink is Posted on the Man's Coat

Up to the Body Builder

How long will it be before some enterprising body-building company will issue a folder giving about a hundred different designs for "fancy" bodies from which a dealer can select the one that appeals to him the most, the guaranty being given that no other dealer in the same business and the same town can buy a similarly-shaped or colored car? The field undoubtedly is there, and there seems to be enough profit in it to tempt the man with initiative.



A Classy Body Used by High-Grade Tailoring Establishment

Unique Car Bodies Are Effective Advertising

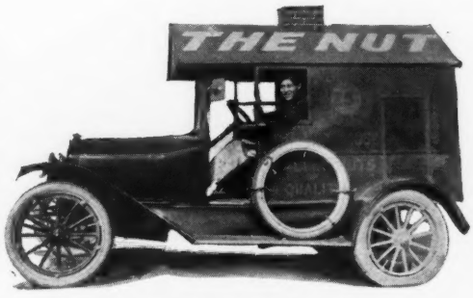
In planning a distinctive car body, the first consideration should be the nature of the appeal to the public, or the class whose trade is sought. For instance, a popular chewing gum might be advertised in a startling or grotesque manner that would sell the gum—but it would never do to advertise pianos or diamonds in that way.

Two examples of contrasting publicity may be found in this illustration: A car representing a gigantic ant, lying flat on its back and waving its legs in death struggles, is an excellent advertisement for ant paste. The appeal is directed to the great mass of the people, including the cook in the well-to-do home, the housewife in the cottage and the dweller in the tenement. Quite different is the public whose trade is sought by a high-class ladies' tailor. The car designed for that firm is quite as distinctive as the ant paste machine, but it is elegant, a bit quaint and meets the favor of cultured taste.

An Excellent Ad For Ant Paste

Very often a replica of the article sold is adaptable for the body of a delivery car; if it is a patented article of distinctive shape, so much the better, as it helps fix the image of that object firmly in the public mind. As an example of that type of car is a vacuum cleaner, which was reproduced in large size and set on the back of a small runabout. The door is in the rear, and the body will carry several cleaners. This outfit is useful for salesmen, delivery men and also for operators who make use of vacuum cleaners on contract with householders. A dozen other examples of this type may be mentioned, the Thermos bottle, the Pep-O-Mint package, the Bromo Seltzer bottle and the Warner Auto-Meter. The latter, however, was not for delivery purposes, but was a huge working model of the device that was sent on a tour for advertising the speedometer. As the car to which it was attached drove through the streets, the 10-ft. model registered the correct speed in numerals a foot high. This is one of the most elaborate mechanical car bodies ever devised for advertising.

Used For Advertising of Pepomint and Not For Delivery Purposes



The Nut House—Used For Delivery of Salted Nuts to Retail Stores

When the object to be sold is not available for reproduction as a car body, it sometimes happens that the firm name is adaptable. A specimen is the delivery car of The Balloon Dye Works of Los Angeles, which operates a fleet of light cars shaped like dirigible balloons. These were inexpensive to build, yet proved very striking and at the same time practical for delivery. The rear door admitted to a wardrobe body with racks on which the newly-pressed garments were hung. There was not a bit of time wasted in wrapping or boxing the cleaned or dyed suits, and the saving was considerable both in time and material. The garments were delivered without a crease, which was another decided advantage.

This Car Delivers as Well as Advertises This Popular Sedative

With these practical advantages was combined a striking bit of advertising, for

everybody who saw a dirigible balloon running through the streets on wheels, remembered the Balloon Dye Works when he thought of having his suit cleaned.

More elaborate was the design of a clockmaker, who had a marble mantle timepiece copied in large proportions, to be used as a body for his repairman's car. It carried on each side a two-foot dial and a mechanism that kept right time. The sign it displayed was right to the point, "Stop Us If Your Clock Needs Repairing," and the car secured considerable business while making its rounds by this invitation.

Approaching the "circus" style of advertising is the design of a cigar merchant, a jobber who was exploiting a certain brand. In delivering to retailers he made use of a small car of a laughter-compelling design. It carried a large replica of the cubical box in which the cigar in question was sold. This served as the delivery body. The advertising feature was a giant's head, a jolly, smiling countenance, from which protruded a cigar fully 5 ft. long. Of course it was a reproduction of the shape and carried the colored band of the advertised cigar. As the car was driven through the streets the passers-by were surprised to see an occasional puff of smoke emerge from the tip of the cigar and between the smiling lips of the giant, and every time the smoke issued, the big ears of the smoker wiggled with delight. While it was elaborate and expensive to build, the unique delivery car paid for itself by the publicity, especially as it was the subject of a newspaper write-up in every town through which it traveled.

A type of advertising and delivery car which is adaptable to almost any business is the show case. It is simply a glass case of suitable dimensions in which goods can be displayed, and it may be arranged so that parcels for delivery can be concealed behind and under the display. The device was originated by a Los Angeles dealer in health foods, who used it for display only, showing a meal composed of his wares, set out as on a table. The idea was so good, however, that it was copied and developed by other firms. For a florist it would be ideal, the glass walls suggesting a hothouse, while the flowers and ferns to be delivered could be artistically arranged and delivered without the slightest danger of injury. In fact, this type of car, which carries the show window to the public, is so practical as a method of displaying goods that it is likely to be extensively copied by dealers in a wide variety of goods.

It will be observed that by the use of a light-weight commercial car of low cost, remarkable effects can be produced by exercising some ingenuity in designing a car body to catch the eye. It may be an inexpensive form of advertising, as a firm that uses cars for delivery or salesmen has to reckon with only one additional item of expense, the distinctive body, to produce a publicity car that spells profit.

The Seattle Restaurant Co., of which Chauncey Wright is president, has a Buick ¾-ton truck in operation that has a body shaped like a loaf of bread. They claim that the novel body is an excellent medium of publicity for the company.

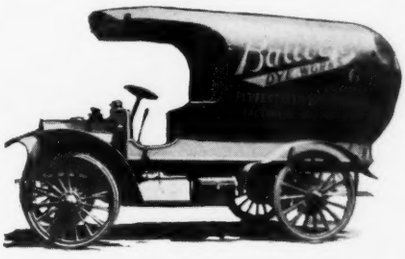
The Bishop Chimney Cleaning Co. has a Ford machine which they have fitted with a body that is the counterpart of a house. I. West, the manager, states that the operation cost, including gasoline, oil and tires, is $.01¾ per mile and their upkeep cost has averaged only $5 per month. He claims that their novel body has more than paid for itself in the additional advertising resulting from it.

A car with a house-shaped body, with the words "The Nut" painted on the outside in bold letters, is being used by the Nut House, Inc., of Seattle, with excellent results. It is a Metz 750-lb. delivery car, which they use for delivering their salted peanuts and almonds to different retail stores in Seattle. According to Henry Klaven, their driver, their machine runs 20 miles on a gallon of gasoline and 50 miles on a pint of lubricating oil. The car runs from 55 miles to 75 miles a day, and it causes more laughter and excitement than any car in Seattle. The firm started in a few years ago with very small quarters in the Maritime Building, and it now has a big factory on First Avenue, South, with nearly a hundred employees. It is largely due to their little shanty house on their delivery cars with its little ring of smoke coming out of the chimney.

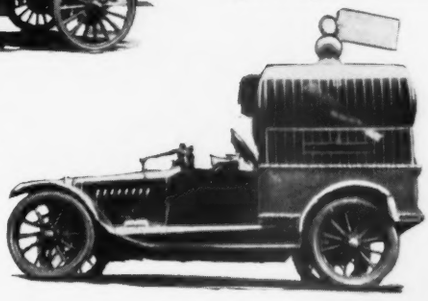
The whole conception is unique and a persistent advertising campaign connected with it has been of great assistance.

The Puget Sound Rubber Co., the Seattle agency for the Federal tires, has a novel car which is used for delivery and service work. It has a body shaped like part of a tire that has proved excellent publicity for them.

A clever advertising scheme was inaugurated in Baltimore recently, when the manufacturers of "Pep-O-Mint," a confection, placed a body built like a package of their product upon a Ford chassis, which had been stripped of everything but the mudguards. The novel idea has proved its worth to the originator and it can be



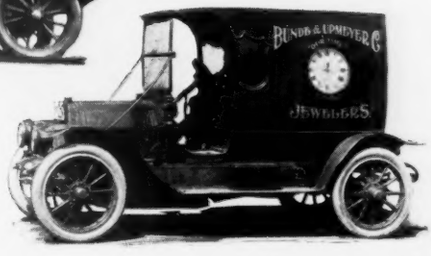
Dye Works Car. One of a Fleet Used for Delivery.



Body to Advertise Bird and Pet Shop

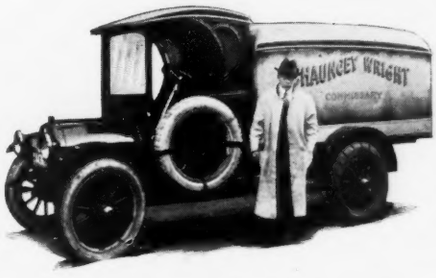
Large Victrola Body Used by Philadelphia Firm

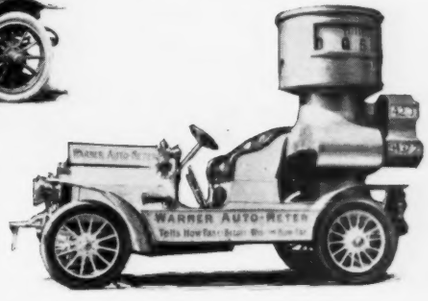
Below is Shown the Seattle Restaurant Company's Car Body, Made to Represent a Loaf of Bread.



A Jewelry Firm's Delivery Car is Shown to the Left

Below is Shown Warner Advertising Car, Not Used For Delivery, However.





seen daily on the streets of Baltimore. It is used for advertising purposes only.

A life-size model of a horse mounted upon the chassis of a light automobile is the latest device for attracting the attention of the man on the street. The post of the steering wheel is extended through the neck of the horse so that while the driver appears to be manipulating the bridle, he is directing the car. The controls have been cleverly arranged so that they can be operated by the feet. The only advertising on the outfit (which is the device of a publicity man for a popular drink) is the lettering on the blouse of the jockey and this garment is ingeniously contrived from muslin on which is printed a score or more of display ads. The vehicle was driven through the streets of Boston recently and resulted in blocking traffic until the crowds got used to the sight of a "horsemobile."

G. J. Johnson, of the G. J. Johnson Cigar Co., Grand Rapids, Mich., decided about two years ago to experiment with a light delivery truck in connection with a perplexing problem of filling short orders to stores in the remote parts of the city and to small towns throughout the county. When he decided on the truck he figured that an unique model would not only serve his purpose as far as quick service was concerned but it would, at the same time, serve as a valuable advertising medium.

The Johnson Co. has always made a specialty of "Dutch Masters" cigars. This brand was the leader. The first association, Johnson figured, that comes with the "Dutch" is the wooden shoe. The second is the windmill. He embodied both in his plans for the new truck and had a huge wooden body, the shape of a wooden shoe, mounted on the chassis. On the front he had a Dutch landscape painted and projecting from a painted mill were the four wings. On each side of the car he had reproduced the painting which he used ordinarily in the advertisement of his brand, and over all, suspended from two iron standards at the front and rear, was a large pennant with the name of the brand inscribed.

The car was a real sensation, and everywhere it was driven it was the object of a great deal of interest and curiosity. It was operated with such success in the quick delivery issue that several other models were made. These cars are now used almost exclusively, and they have brought in enough of an increase in business to return the cost price many times.

Light Truck a Boon to the Farmer

By C. W. SHAFER

THE worth of the light truck to the farmer is well illustrated in the experience of John Smallegan, a farmer whose acreage is located near Jamestown, Mich. It was not until the spring of 1916 that he was convinced sufficiently to give a 1-ton truck a trial and the results he achieved during the summer months in getting his produce to market were so satisfactory that he will install a second truck in 1917.

Smallegan, like hundreds of other farmers in the vicinity of Grand Rapids, depends largely for his annual profits on his sales of produce to hucksters on the municipal market. At Grand Rapids this market opens at 4 a. m. and unless the producer is on hand at that time he is extremely apt to lose considerable money on his load. Consequently it is necessary that a start be made early the night before. With Smallegan, for years, it was a duty to start from his farm, 17 miles distant, at 11 p. m. With a heavy load his two horses demanded nearly five hours for the journey. Hence, during the active months, he had little or no time for rest, practically the entire day being consumed in gathering his produce and getting it on the market.

The first night he had his truck Smallegan started out at his usual hour. He drove slowly, with his slight acquaintanceship with the car, but arrived at the market by 2 o'clock, two hours before the opening bell. Gradually he became more familiar with the duty and now, instead of making his start at 11 p. m., as he used to do when he drove horses, he leaves the farm at 2 a. m. and arrives in plenty of time, thus giving him an opportunity to secure sleep which freshens him for his strenuous selling duties.

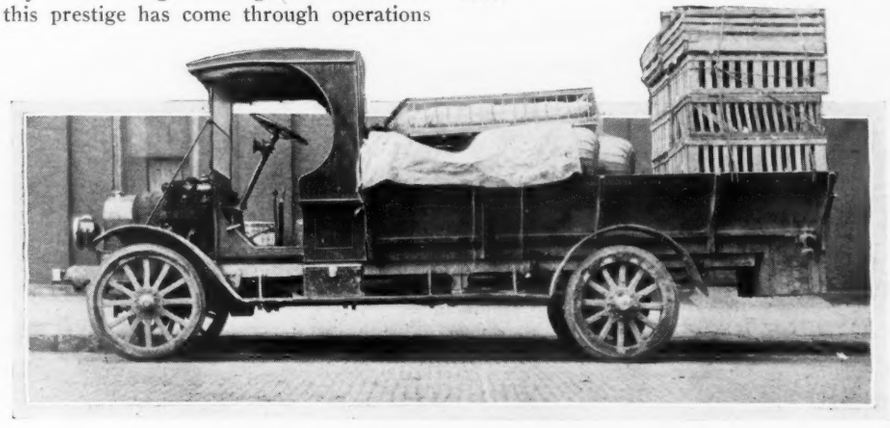
More Sales at Less Expense

In this respect Smallegan outdistances all his rivals, who, less progressive in their ideas, still cling to the old methods of transportation. More than that, he profits in other ways. On at least twenty different occasions this summer he disposed of two loads of produce on the market while all his competitors were disposing of one, and each load was of greater capacity than any one of his competitors because his truck permitted the increase. In negotiating the coups Smallegan discovered that he could dispose of his first load, return to his farm and secure the second and then make the market in plenty of time to hit the late purchasers. Without the truck these feats would have been absolutely impossible inasmuch as one trip a day with a horse-drawn vehicle is all that can be expected. His books for the summer show that his sales were increased by nearly one-half while his expenses of actual operation were less than before.

At the present time Smallegan is the only farmer who drives to the Grand Rapids market with a truck. His phenomenal success in the adoption of the vehicle is a matter of common information and many of his competitors have conceded that they will shortly be in the market for machines in order to keep pace with him.

Smallegan's Forest Grove Farm is one of the largest in Western Michigan. It has a prestige which cannot be equalled by any other acreage and a generous share of this prestige has come through operations during the past summer. Recently Smallegan was asked by another farmer how he managed to get along so well.

"My success is due to my grasp of progressive ideas," Smallegan declared. "I made twice as much money this year as I ever made before in one year and almost three times as much as any of my neighbors simply because I did away with horses in carrying my produce to market and installed a truck. Next year I will have another truck and my profits will be proportionately larger. It stands to reason that I will outstrip my competitors. As a matter of fact, when other farmers use horses in transportation they are not competitors. They will be forced to install motors just like I have in order to bring about the old relation that existed when I drove horses. Until that time I have them bested at every turn. I can not only make faster time and more frequent trips, but I can save time on a hundred details that used to be my chief worries. And, better than the fact that I can make more money at a lessened cost of operation, I can work so rapidly that I have time to spend with my family and to sleep that I never had before."



Menominee Truck Used by John Smallegan
With this light truck he has doubled his profits over his former horse-drawn equipment

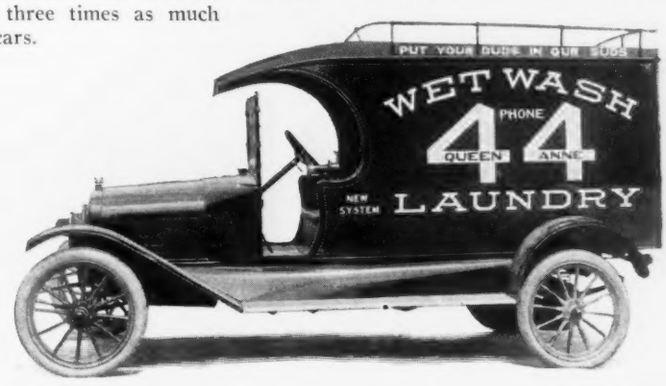
The CHILTON ideal—honest circulation; results to advertisers—fully exemplified in the CCJ

Exit Horses: Enter Small Trucks

By WARREN EUGENE CRANE

THE small truck is rapidly coming to the front in delivery work in the Northwest, and is continually playing a more important role. The one-horse wagon is becoming the exception instead of the rule. This is especially true in Seattle, where the city is over 14 miles in length and 7 miles wide in many places, with hundreds of steep hills, two irregular shaped lakes, one winding river within its boundaries to make a host of detours necessary. It is often said that if Rome was built on seven hills, Seattle was built on seventy-seven, and the hard part of it is that they are in the heart of the city as well as the suburbs. Queen Anne Hill, Capitol Hill, Beacon Hill, Renton Hill, Denny Hill, West Seattle Hill, Magnolia Bluff and a host of minor hills are so steep that it is impossible for horses to climb them in many places. Another obstacle that favors the small trucks is the long detours that are often necessary in reaching points nearby on account of the lakes, rivers and numerous declivities, often making it necessary to drive 4 miles to reach a point 2 miles away.

"We have found the light truck far more practical than either the 1 or 2 horse wagon for delivery purposes," said J. W. Walker, president of the Pantorium Dye Works, one of the largest cleaning establishments in the Pacific Northwest. "We have seven light Ford delivery cars with special bodies upon them which we find far more satisfactory than our horses and wagons. We are replacing our horses and wagons as fast as we can with light Ford delivery cars, for we find that with them we cover twice as much ground, give more prompt deliveries at only a slight increase in monthly cost. We have found that the initial outlay for a horse-drawn vehicle was $35 more than it was for a motor delivery car. We have paid an average of $225 for a horse, $300 for a wagon and $35 for harness, making a total cost of $560, while a chassis has cost us on an average of $375 and the special body $150, making a total of $525. We have been buying second hand cars and rebuilding them, with excellent results. From January 1st, 1916, to August 1st, six horses and wagons have cost us $1258.51, while six automobiles cost us $1408.98. These figures include gasoline, lubricating oil, tires, repairs, depreciation and insurance for the autos—and feed for the horses. This makes each wagon cost us $209.25 and each motor delivery car $234.83 for this period, or in other words, $29.96 a month for one and $33.50 for the other. There is one factor in these figures which must be taken into consideration and that is the fact that we are not keeping up our wagons and repairing them as well as we are our machines, because we are gradually taking them out of service and replacing them with motor cars. In other words, if we were taking as much care of our harnesses and wagons as our light delivery trucks, our maintenance costs would be equal, while our original outlay is less. One must consider also that we cover from two to three times as much ground with motor cars.



Light Car Used by Seattle Laundry

This Metz car is successfully used by the New System Wet Wash Laundry. It is used in the Queen Anne section of Seattle, which is very hilly, and tires out a horse completely.

"We secure the highest prices for our work in the city. Firms in our line have been going out of business or failing very often during the past year, but our business has grown because we do not cut prices and deliver all our goods promptly. When we make a promise to deliver at a certain time, we have one of our six light delivery cars at our command to fulfill it, and I believe that one of the main reasons why we can get a higher price than our competitors is our ability to deliver our work promptly and quickly."

Condensery Uses a Converted Ford

The Pacific Condensery, at Mt. Vernon, Wash., used this Ford, which has been converted into a truck by a Wright truck attachment. It collects milk, carrying 6300 lbs. generally and covering sixty-four miles per day.

Laundry Rapidly Displacing Horses

The Supply Laundry Co. has had a very satisfactory experience with the light car and has nearly displaced the horse. They have twenty light delivery cars and three touring cars which they can use for emergency purposes. They also retain three two-horse teams which they will soon replace with automobiles.

Upon a careful investigation of their expense books on their automobiles, we find the following facts: The Krit light delivery car with a 1000-lb. capacity, which ran 815 miles in January, 1915, cost them as follows: Tires, $11.94; 64 gallons of gasoline, $7.04; 15 quarts of oil, $1.50; 5 lbs. of grease at $.06 per lb., $.30; labor, $6.68; parts, $2.03, and insurance, $5.42, making a total maintenance cost of $34.91. It formerly used a horse and wagon which required $35 per month to keep it going, covered one-third of the territory and brought in only $90 worth of laundry work a week, while the automobile brings in an average of $180 a week.

The company has a Ford car in its service with a capacity of 800 lbs. It ran 570 miles during the month of April, 1916, with the following operating expense: Tire cost, $6.20; 57 gallons gasoline, $6.84; 8 quarts of oil, $.80; 2 lbs. grease, $.16; labor, $4.40; parts, $5.07; insurance, $5.42; making a total cost of $28.91 per month. This machine covers the Green Lake and Fremont routes, and brings in an average of $135 worth of laundry each week, where formerly a double team, which cost $40 a month to operate, brought in only from $75 to $80 worth of work weekly.

A Ford light delivery car with a 1000-lb. capacity covered the company's route on Queen Anne Hill, making 457 miles during the month of April, 1916. A detailed statement of the expense shows the following figures: Tire cost, $5.02; 48 gallons of gasoline, $5.76; 19 quarts (leaking engine), $1.90; 2 lbs. grease, $.16; labor, $4.40; parts, $2.95; insurance, $5.42; making a total of $25.61 for the month. The machine makes two trips where the horses and wagons made only one. The horse and wagon cost them $35 per month on this route and took in only $80 to $90 worth of laundry each week, while their

car averages from $200 to $225 each week from the same district. This shows plainly the value of the car in the business that it brings the company.

In their delivery of the Mt. Baker Park, Beacon Hill and Ballard districts, they use an 800-lb. light delivery car, which covered 946 miles during April, 1916, and incurred the following expense: Tire cost, $12.29; 90 gallons of gasoline, $10 80; 8 quarts of oil, $.80; 2 lbs. of grease, $.16; labor, $4.40; parts, $2.40; insurance, $5.42, making a total of $36.27 per month. Therefore, the tire cost was 1 1-3 cents per mile; the gasoline cost was $.01 per mile, and other things were nominal. Formerly the company used a two-horse team and wagon in the same territory with a cost of $45 a month for feed, hay, horseshoeing, with laundry amounting to $60 to $80 per week coming in, while at the present time the machine is bringing in $140 to $150 worth of laundry work a week. They have one ½-ton Overland truck, which has done the work of two teams for 3½ years, with an average of 14 miles to the gallon of gasoline, and 10,000 miles to each tire on all four wheels.

R. E. Bisset, of the company, states the situation as follows: "We are displacing the horses with light delivery trucks as fast as we possibly can. On an average a two-horse team brings in $90 worth of laundry each week, with an upkeep and running cost averaging $45 a month. On the other hand, our 800-lb. delivery cars cost us $35 a month on an average, with an average of $150 worth of work from a route."

Nut House, Inc., Uses Trucks

The Nut House, Inc., uses a Metz 750-lb. light delivery car for delivering their salted almonds and peanuts to all parts of the city. According to C. A. Peterson, of its shipping department, the machine runs 55 to 75 miles a day, covering 20 miles on a gallon of gasoline and 50 miles on a pint of lubricating oil. During the three months that it has run the car, it has purchased one new puncture proof tire. It uses a dray for hauling freight back and forth from the depots, but it claims that for prompt delivery it much prefers its light delivery car because it is quicker, and the unique little house marked "The Nut," which serves as a body, is an excellent advertisement for it.

The Bass Hueter Paint Co. has had a very satisfactory experience with a Wright Truck attachment upon their Ford delivery car. Figuring upon a basis of 300 days to the year and 40 miles per day, it secured the following figures in reference to its cost of operation:

	Per day
Gasoline, 15 miles per gal., 19c. per gal.	$0.50
Oil, 400 miles per gal., 60c. per gal.	.06
Repairs and overhauling (from data of trucks in use), $50 per year	.16
Tires, front, guaranteed 3500 miles	.26
Tires, rear, guaranteed 7000 miles	.22
Garage, $5 per month	.17
Insurance, fire, theft, liability, damage, $115 per year	.38
Interest on money, 8 per cent.	.19
Depreciation, 20 per cent. per annum	.47
Total operating cost per day	$2.41

Condensery Uses Wright Truck Attachment

The Pacific Condensery at Mt. Vernon, Washington, uses a Ford car with a Wright Truck attachment in collecting milk. During the three months that the car has been in operation, it has carried an average load of 6300 lbs. over a route 64 miles in length. It was impossible for a team of horses and a wagon to cover the trip in the same length of time.

The Seattle-Empire Laundry Co. is using a Wright Truck attachment on its Ford delivery car, and is carrying a load of 5800 lbs., with an average ton-mile operating cost of 6 cents against an average ton-mile cost of 20 cents for horse-drawn vehicles. With a 5000-lb. load it has been able to pull up a 5 per cent. grade without apparent effort.

The West Seattle Laundry has used an Overland ½-ton truck for three years, and has replaced two teams with it. It has averaged 17 to 18 miles to the gallon of gasoline and 600 miles to the gallon of lubricating oil. Rear tires have averaged 5000 miles each, and front tires 8000 miles each.

The Grote-Rankin Co., one of Seattle's largest furniture firms, has been using an Overland ½-ton truck for three years. The rear tires have run 10,000 miles on an average, while the front ones have run 14,000 miles.

The New System Wet Wash Laundry Co. has placed a Metz 750-lb. delivery car in service, which has saved it time and afforded it a large amount of advertising. It covers Queen Anne Hill district and climbs many steep declivities which would tire horses completely. Their telephone number "Queen Anne 44" is painted in huge letters on the side of body and attracts attention wherever it goes.

Parcel Delivery Secures Good Service

The Merchants Parcel Delivery uses a light Metz delivery car with excellent results in delivering to Queen Anne Hill, Ballard, Green Lake, West Seattle, Georgetown, South Park, Ravenna, Magnolia Bluff, Fauntleroy Park, Gatewood, Fremont, Mt. Baker Park, Hillman City and many other suburbs. It finds that its gasoline averages 18 miles to the gallon, lubricating oil 125 miles to the pint, and 5000 miles to each tire. It claims that the light delivery car is ideal for the general run of parcels that the dry goods and notion stores send out.

The Delamatros Delivery, the Herrett Grocery, the Smiley and Heppler Delivery, Ross Brothers' Grocery, Rainier Meat Co., Smith's Grocery, the American Laundry, the Puritan Pie Co., Louie's French Dye Works and the West Seattle Dye Works have recently put 750 Metz delivery cars in service. Most of them are replacing horses because they feel that the motor car is better fitted to do the work under the stress and strain of Seattle's hills and its unusual distances.

Metz Delivery Car Used Successfully in Seattle

Despite numerous hills and heavy loads, this 750 pound Metz car has been used with excellent results by Harry Delamatros, of Seattle.

WINTHER TRUCK TO BE MADE BY JEFFERY MEN

Winther Motor Truck Co., Kenosha, Wis., has been formed with a capitalization of $333,000, by Martin P. Winther, formerly of the Thos. B. Jeffery Co., now the Nash Motors Co. A tract of land four miles west of the city has been purchased and the building of the plant will be shortly commenced. Three models have been designed, and it is hoped to start production in April. Walter D. Rightmeier, formerly assistant truck sales manager of the Nash Motors Co., is sales and advertising manager of the new concern.

Using the Body of the Truck to Good Advantage

Another case of using large body panels for display advertising is shown in the truck of the Wrigley Company, which is used to supply the jobber trade in Chicago. The well-known "Doublemint" package stands out in heroic size on a red background, while the firm name is in white. A two and a half ton Sterling chassis is employed to carry this van body.

Plenty of the right kind of circulation means quantity results to advertisers in the CCJ

The Small Delivery Car in Denver

All Makes of the Small Delivery Car Represented on Denver's Streets. Competition Makes Use of Commercial Car Imperative

By CHAS. M. SMYTH

IN the use of commercial cars in Denver, the small truck has made a much more creditable showing than the large truck. The light delivery car has installed itself into all manner of uses here and in some instances has superseded the heavy truck. Figuratively speaking, trucks of the smaller size have their limitations, but in actual practice those limitations are stretched often into the realms of the heavy truck.

There are so many users of small trucks in as many different capacities, that the mention of only a few will be possible here.

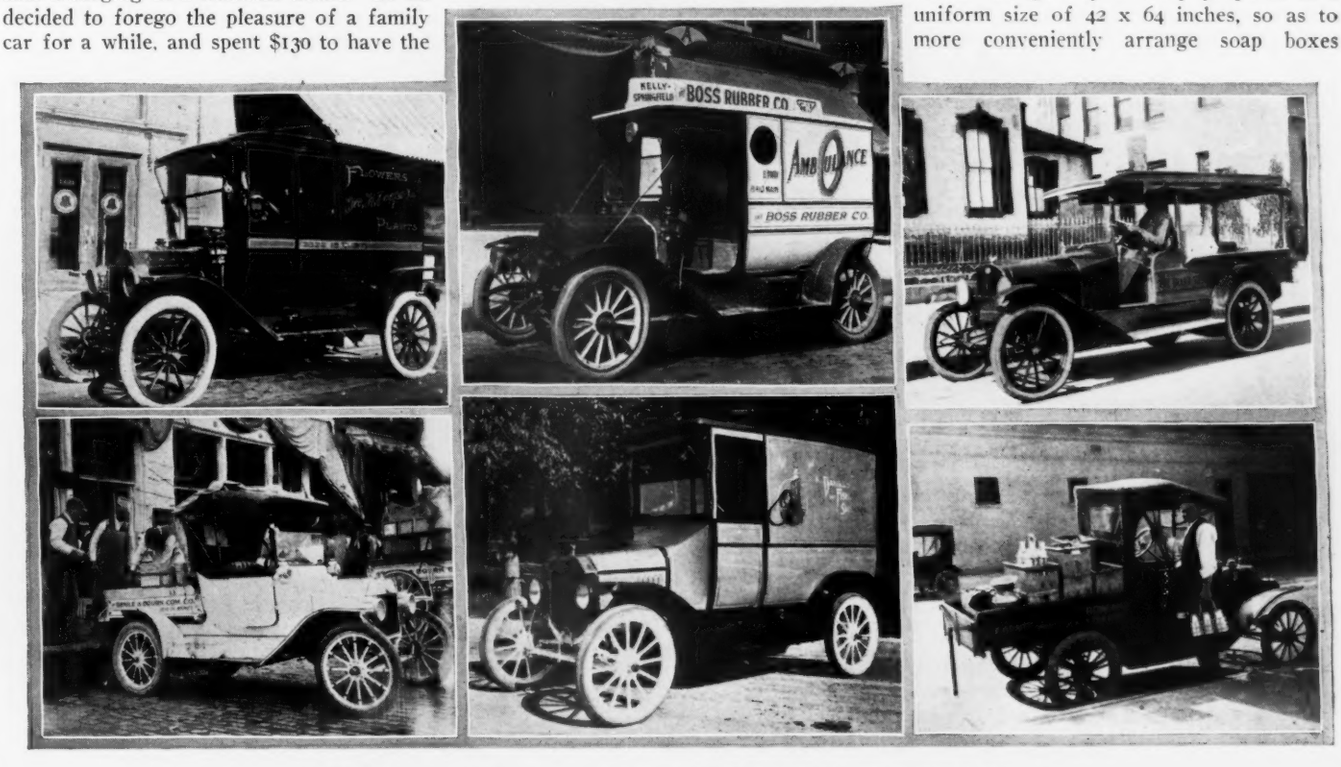
Geo. H. Cooper, a florist at 833 15th St., has only the most gratifying praise for his little delivery car and says he could not even think of conducting his business again with horse delivery. When he first discarded his horse and wagon he simply used his five passenger Ford, placing his cut flower boxes and potted plants into the seats and onto the floor of the car. Even in that manner he made many more deliveries than he did formerly with the horse. But he felt there was something lacking. His delivery had no distinguishing marks from that of any passenger car it passed, and no one could tell his car was that belonging to a business house. So he decided to forego the pleasure of a family car for a while, and spent $130 to have the body removed and a delivery top built upon the chassis. He is quite sure that this procedure alone accomplished a doubling of his orders, and now his little delivery car has about all it can do. He is frequently called upon to procure outside assistance and is contemplating adding another car this winter. He attributes a large portion of his success to the fact that people prefer to deal with a florist who can deliver their orders in a good looking auto delivery car.

Less than a year ago the delivery service of the largest grocery concern in Denver was conducted almost exclusively with horse-drawn wagons. I. Berlin, major owner and proprietor of three large retail grocery houses in the central district, could not be induced to install motor delivery. "Why should I?" he would reply when approached. "I don't even own the horses nor wagons now used in my delivery department. The men I employ own their own outfits. All I require is that they deliver the goods and do so promptly, and if they wish to use motors or horses is nothing to me." But not long ago some of the men tried motor delivery in place of their former broncho outfits and found them to be more efficient in several different ways. They had been formerly paid a flat rate of $24 a week, and while Mr. Berlin refused to raise the salaries of those using trucks, nevertheless the men found they could make quite a saving over and above their horse maintenance. Frank Archambault has had his car six months and is now $75 to the good, where formerly he never could save a cent over the expenses of the horses. The arduous work required of the team necessitated his keeping three horses constantly, as was the case with most of the other men.

Others employed at the same place have followed the example with equal success, and now that Mr. Berlin has seen the wonderful improvement in the appearance of the auto delivery over the scrubby looking bronchos formerly used in his service, he has ordered his manager of that department to employ only men owning autos, and to let out as rapidly as possible those clinging to the horse delivery.

Suggests Uniform Body Sizes for Grocery Bodies

Johnnie Hallieburton, manager of Mr. Berlin's delivery department, offers as a suggested improvement, that motor delivery car manufacturers build the bodies intended for grocery delivery purposes to a uniform size of 42 x 64 inches, so as to more conveniently arrange soap boxes



A Few Light Delivery Cars in Various Uses on the Streets of Denver
Note the specially constructed closed bodies to protect the driver and helper during inclement weather

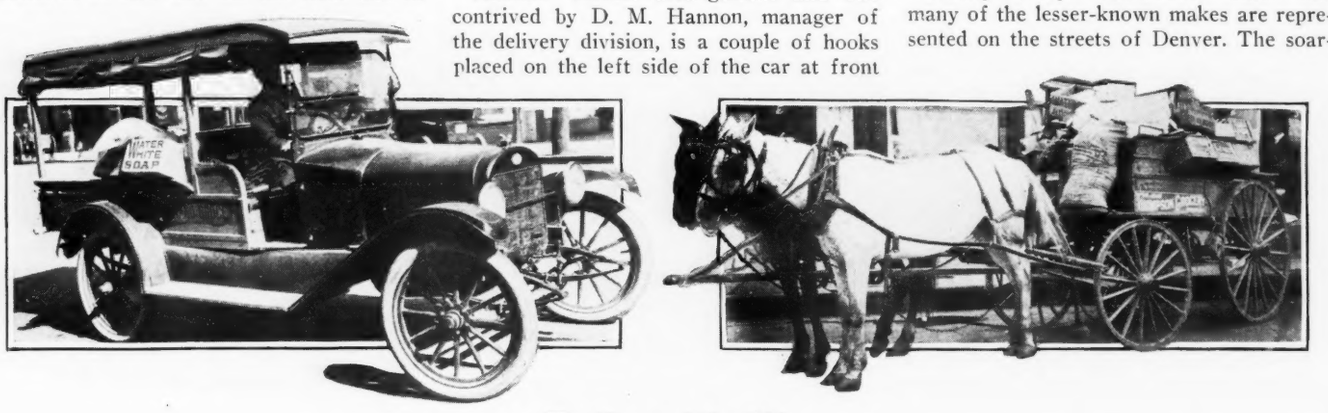
Merit wins—that's why the CCJ is the leader

which are used in most instances to pack individual orders into. A soap box is 20 in long by 15½ in. wide. An auto body of the size mentioned would permit eight boxes to be laid flat on the floor and fit fairly snug, or 12 boxes could be carried by making a center row of four and banking four upon each side slanting inward.

The Daniels & Fisher Stores Company, one of Denver's leading department stores, has recently installed eight new Ford delivery cars to its fleet, and the arrangement of the bodies is something not heretofore seen. The front is so constructed with windows which may be lowered to give an open effect, or raised and entirely enclose the driver and hopper and thus protect them from the elements in severe weather.

Another distinct arrangement and one contrived by D. M. Hannon, manager of the delivery division, is a couple of hooks placed on the left side of the car at front and back to facilitate the carrying of a long rug or carpet roll. As entrance to the car is only upon the right side the rug is never in the way. It will always extend forward enough to be visible to the driver and there is never danger of loss. Straps above with buckles on the ends of the hooks securely hold the rug in place. This arrangement eliminates the necessity of carrying a rug upon the dusty and greasy running board, or leaving a back door open because of a rug protruding behind, with consequent danger of having smaller packages lost or stolen.

Nearly every well-known make and many of the lesser-known makes are represented on the streets of Denver. The soaring price of gasoline appears to have little effect on the Denver merchant. He has learned that the improvement in auto delivery service over horse-drawn delivery is worth even the high cost of fuel. Also that competition is forcing him into using auto delivery to keep abreast of his competitor who has already installed the service, or to get an edge over the one who refuses to install the more modern method.



The New and the Old

It is not difficult to decide which of these delivery conveyances a housewife would prefer to have stop in front of her house with her groceries. The auto, while being more speedy, will also neither chew the grass out of the front lawn nor attract a lot of flies to leave behind

Side Lights About War Trucks

By GEORGE W. GRUPP

IF one wishes to listen to a real live wire truck agent and motor truck enthusiast of Buffalo, Arthur J. Sanderson, agent for the Service, known to the trade as "Jack" Sanderson, is the man to go to. This old "sour dough sheriff" has had experiences which few men can boast of.

Here is a talk which is typical of Jack: "I spent last Saturday at Niagara-on-the-Lake, Ontario, Canada, where they have one of the largest training camps for Canadian soldiers.

"At this camp, for the last five months a 1½-ton model 'QW' Service truck has been working for the Canadian government which is driven by its owner, A. D. K. Serves.

"This truck has been making five round trips a day from Saint Catherines, Ont., to the military camp at Niagara-on-the-Lake, a distance of 16½ miles each way. It has been hauling bread for 16,000 Canadian soldiers.

"This bread is packed at St. Catherines, put up in paper cartons, each carton holding 24 2-lb. loaves. When the truck was loaded it had on just two tons of bread. So you can see that 16,000 hungry soldiers devoured 10 tons of bread every 24 hours.

"One trip a week this Service truck is loaded with cigarettes. I cannot give you the exact weight of a load of cigarettes, but the body on this truck is 10 ft. 6 in. long and 5 ft..8 in. wide. The entire floor of this body is covered with cigarettes up to a height of 5 ft. 2½ in. One load of cigarettes just lasts these soldiers one week; they are some bread eaters and some cigarette smokers.

"I noticed that about 80 per cent. of the soldiers wore wrist watches. After inquiring I found that it is quite a fad among the Canadian soldiers. I also found out that it is compulsory for certain officers and heads of this camp to carry a wrist watch so that they can time each and every military performance that the soldiers go through. I then asked Mr. Serves, the owner and driver of the Service truck, if he had taken out a load of wrist watches to this camp, but he said that there had not been anything doing so far, but as these 16,000 men left shortly for the front and another lot were coming through by train, he thought that before the end of the month he would have to put another machine in operation to carry wrist watches to the outfit.

"It was only a short time that these 16,000 privates and soldiers realized that as long as the truck was used they could have their bread on time. When the buglers blew the call for mess the bread was on the table warm, right out of the ovens.

"Another important item in trucking is cigarettes. It seems to me that when the Canadian soldiers are out of cigarettes they become peevish as does a baby without a bottle of milk. They are heavy smokers, and, in reality, this is their only enjoyment. By the use of a truck they know the minute that the truck will arrive in camp. If a soldier has only one cigarette left he can light up at 10 minutes to four in the afternoon and smoke, because he knows the truck will be in camp at 4 P. M.

"All of this shows the great value of a motor truck to the army. It is indispensable. A team of horses would have never been able to perform this task. And to attempt to make them do it would have meant more fertilizer for the farmers. The motor truck has taken the place of the horse in the army when it comes to hauling. And in the future it will play a still greater part than it does today.

"But there is one thing the manufacturers must bear in mind. A truck as it is used in the army is a more severe test than is its usage on level and nicely paved streets. Therefore, if bread and cigarettes are to reach the camp on time they must build a real substantial truck, one which will stand a multitude of abuses to which a truck is subject when in army service."

The CCJ is built upon the lasting foundation of honest circulation

The Fifth Avenue Coach Company

Being a Comprehensive Description of the Administration and Operation of New York's Famous 'Bus Line

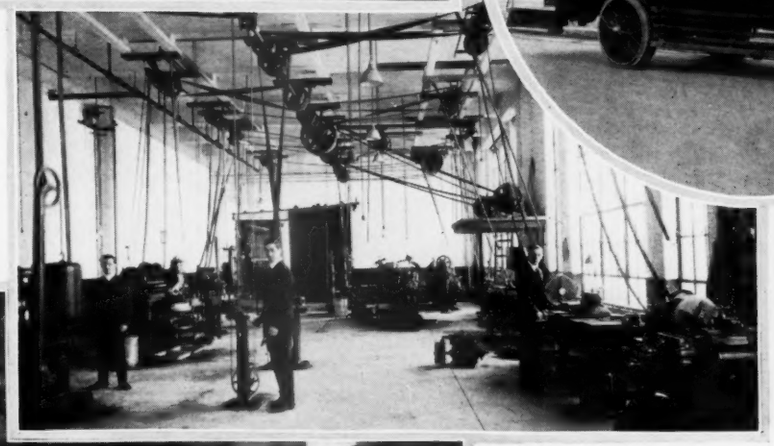
By GEORGE W. GRUPP

THE motor omnibus is the natural-born enemy of the street railway companies. It is the natural-born enemy because its cost of operating and maintenance is far below that of a street railway; that there is no necessity for a number of large and expensive power plants; that expensive tracks and overhead wires are not necessary; that it requires less money to install; that it is in a position to offer quicker and better service; that it is more able to expand and meet the demands of new sections; that it helps to keep the city beautiful; that new routes may be tried out with little or no extra expense; and that if one 'bus breaks down the entire 'bus traffic is not at a standstill as is the case with a street railway system. And for these reasons the motor 'bus idea is growing in strength and popularity.

Possibly, the pioneer 'bus line in this country was the Fifth Avenue Transportation Co., Ltd., which was organized in 1887. In 1895 this line was taken over by the Fifth Avenue Coach Co. This 'bus line, which is a familiar sight on Fifth Avenue, is the strongest and biggest omnibus line in the country. It is excellently equipped and very careful attention is paid to it. Everything is operated with the idea of getting the maximum results at the minimum of time, labor and money.

Starting Point at Washington Square
'Buses are assigned to numbered sections designated in the route schedule.

Latest Type of 'Bus
An exterior view of the new style body used by the Fifth Avenue Coach Company.



Interior of Machine Shop
Showing shop equipment and electric power drive

Interior of the New 'Bus
Below is shown the latest seating arrangement and the driver's cab.

Garage Building

For this reason it might be well to get a bird's-eye view of their equipment and some of their methods of operation. Their 125 'buses, which have an aggregate seating capacity of 4795 passengers, are housed in a large building on East 102nd Street, just east of Fifth Avenue. It is 250 x 100

Make your product pay—advertise in the CCJ

ft., and has a floor space of 75,000 sq. ft. It is of the steel frame type, with reinforced concrete floors. The first and second floors are sufficiently large enough to care for 130 'buses. Throughout, the building is equipped with the most up-to-date drainage, lighting, steam, hot water, sprinkler systems, and color schemes for tracing the various kinds of pipes. A leviathan-sized freight elevator and a fair-sized passenger elevator run to all floors. On the top floor they have a 5 h.p. National Brake Electric Air Compressor. This automatic compressor is used for cleaning purposes, and for the operating of drills, riveters, chisels, etc.

Gasoline and Oil-Storage Systems

Further, a hydraulic gasoline system is used. It consists of two batteries of tanks, six tanks to a battery, each made of ¼ in. steel plates and holds 500 gal., which are embedded in concrete near the incoming and outgoing doors. Four distributing points feed from these tanks, two on each floor. And the pressure is sufficiently great so that vehicle gasoline tanks may be filled at the rate of 11 gal. per minute, and if necessary, four vehicles' tanks may be filled at the same time without decreasing the flow. Each day the storage tanks are refilled according to the preceding day's consumption.

In addition to their gasoline tanks they have three 500 gal. tanks, sunk in concrete, in which they store their kerosene and lubricating oils. These tanks are equipped with the standard Bowser pumps.

Third-Floor Equipment

On the third floor of their building one will find their repair shop, drawing offices, tool and view room, storeroom, blacksmith and acetylene welding shops, carpenter shop, machine shop, paint shop, cleaning room and battery department. Practically all of their repair and manufacturing work is done on this floor. The object of their enormous equipment on this floor is to supply the operating department with repaired units in exchange for those which are defective, also to keep the various departments supplied with the required parts in advance of their actual needs. In their machine shop only such parts are made where the actual quotations from outside concerns show that they are able to save more money by doing it themselves. Their body department has a capacity of one body every two days. In this department all "annual overhauls" are made. That is, each 'bus is completely dismantled and overhauled each year, irrespective of its appearance or mileage run. All overhauls are dealt with systematically. Each type of vehicle is scheduled to enter and leave at specific times. The reason for this is to assist in their general scheme of standardization. In other words, when special parts are found to be necessary or modifications necessary, such matters are dealt with during the annual overhaul of the type concerned.

How They Keep Their Parts

"Our material is dealt with under a Part Number System," said G. A. Green, chief engineer of the company. "This part number is stamped on all bar work and cast on all castings. The same number is used on drawings, patterns, tools or jigs, bins and store card. Each part is drawn separately on a standard sized sheet, this irrespective of the size of the part. Any changed dimensions are carefully noted on the original tracing. The parts, numbers, descriptions, material, and the number per set of each part are entered in a special part list book which is issued to all heads of departments. The parts numbers on tracings, part lists, or the parts themselves are prefixed by a classification letter which identifies the part with the type of 'bus. Arrangement drawings are made of all units, with part numbers shown against each part. These drawings are reduced in size by a photographic process and issued to the heads of the various departments in book form.

"When material is required," he continued, "an order slip is made out by the foreman or his deputy. Then in turn the storekeeper enters the part number on this slip which he takes directly from the bin card, thus eliminating possible error. The record of each part is kept on a separate card and as each item is issued the balance is struck on this card. Requisitions for new material are based on the preceding three months' consumption, which is considered the maximum. Immediately when the balance reaches half of this amount, known as the minimum, the maximum is requisitioned. For example, if 12 bolts are used in a period of three months, the maximum is 12. When our stock reaches 6, 12 are requisitioned. The fact that a part is issued means that a balance will be struck and automatically steps are taken to reorder if such is necessary. Again, requisitions for new material are checked against the actual quantity of the goods, which avoids the possibility of clerical errors. Our stock sheets are always written out in advance of stock taking, since the numbers and descriptions of all various parts are known. All of our stock is priced so that an inventory only means a physical count and an extension of the various items.

"In our tool and view room," he added, "the issuing of small tools, together with maintenance, also the inspection of all material, either manufactured by outside concerns or by ourselves, is cared for."

Blacksmith, Cleaning and Battery Departments

On this same floor they have a Davis Bournenville type acetylene welding plant. The generator house is located on the roof. The outfit is large enough to care for cracked cylinders, etc. An oxygen torch is also used in this department. Near this department their cleaning room is located. Here all parts sent for repairs are cleaned. The cleaning fluid, which consists of a mixture of gasoline, kerosene and oil, is obtained from a Wieben separator, which is located on the ground floor. The parts to be cleaned are sprayed with this fluid and then dried with compressed air. To carry heavy units or parts from this department to others, special trolley cranes have been provided, each having a carrying capacity of 6000 lbs. Another important department on this floor is the battery department. Here the renewal and replacement of lighting batteries are made.

One Man Responsible for the Cleanliness of Six Omnibuses

Both the second and ground floors are used for the storage and operation of vehicles in service. On the ground floor seven inspection pits are located. These are lined with white tile, are properly lighted with electric lamps at each end, and equipped with compressed air lines. Besides this, excellent washing facilities are provided. "Our method," said Mr. Green, "is that one man is required to wash, clean and polish six cars. Washers report at times which correspond as closely as possible to the arrival of the 'buses. Brass checks, bearing the number of each car are hung on a board, and as the washer reports and the cars arrive, corresponding checks are handed over to him. This method is used in order that the foreman can readily see who is responsible for the cleanliness of each 'bus.

Their Car-Inspection System

"Another thing which might be of interest," added Chief Engineer Green, "is our inspection system. Broadly, the system is that all repair work is taken care of on the basis of inspection after 1400 miles of service. This inspection is known as a 'general overhaul.' No attempt is made to carry out repair work at night. As each car is brought in at night, the driver is required to make an entry in a special book, stating either that his car is O. K. or what repairs are necessary. Extracts from this book are entered daily on our general overhaul sheet, and these are attached to cars during the overhaul period. These sheets show total mileage, driver's name, average fuel and oil consumption, and all repairs or adjustments made between overhauls. A comparison record is also kept, showing the performance of each car in regard to fuel and oil consumption against its type. The sheet also contains details of the special examination which is always made, irrespective of the condition of the vehicle. This work is controlled in sections by men who are educated to take care of the particular section to which they are assigned. In other words, one man repairs transmissions and nothing else.

"Each 'bus is thoroughly cleaned the night previous to its general overhaul and is placed in readiness over an inspection pit so that the work can be commenced the first thing in the morning. As we have no spare 'buses, the foreman in charge of a certain number of 'buses for service, together with a number corersponding to the quantity of general overhauls, must see to it that the repairs are completed each day. This number is fixed in advance by the mileage which is called for in our schedules. Again, general overhauls are required to be completed not later than 4.30 P. M., and as much earlier as possible. No

For its readers—information; for its advertisers—results. That's the purpose of the CCJ

vehicles are expected to be in the house during the evening rush hours.

"Further," he added, "the daily cumulative mileage of each 'bus is posted on a special sheet so that the drivers and mechanical forces can see when each 'bus is due. In cases where the mileage runs over 1400, red entries are made, thus showing that the car is out of its place. We also post, daily, record sheets which gives the average fuel and oil consumption of each vehicle. The fuel situation is given very strenuous attention on account of the great expense of this item. It may therefore be said that the system, from a mechanical standpoint, covers a thorough inspection of every car after 1400 miles of service and a thorough overhaul, repaint and standardization of each vehicle after one year's service."

Types of Omnibuses

The 'buses used by this company are of six types. Types "A," "D" and "E" carry 44 passengers each, and types "G," "H" and "N" carry 45 passengers each. All of these 'buses, which are of their own special design and construction, were reconstructed during the last year. They scrapped all of their old bodies and certain parts of the engine and chassis in order to give greater comfort to their passengers and incidentally increase the strength of the 'bus. Yet in spite of this, their present 'bus, which is much stronger and better lined, is 1000 lbs. lighter and has an increased seating capacity of 33 1-3 per cent. Further, the new body has a vestibule for the driver to protect him from snow, rain and wind.

Omnibuses Run on Schedule Time

"All 'buses are scheduled to leave the garage at definite hours," said Mr. Green, "in order to take care of the average riding conditions which are determined from daily checks taken from points of maximum load. Two or four times a year we change our time schedules. New tables are posted several days in advance, and the crews are allowed to choose their runs on a basis of seniority. In this, as in other respects, the transportation methods do not differ to a great extent from accepted railroad practice."

Operate Seven Lines

They operate seven big route lines and a number of cross-town lines. These run on a regular schedule. At certain points transfers are issued, transferring a passenger from one line to another. The drivers, conductors and talleymen are dressed in neatly clad uniforms. All passengers are required to insert their fare in a register which the conductor carries in his hand. At the end of each trip the number of fares collected are noted by the talleymen.

President Meade a Careful Executive

This is largely due to the persistence and careful executive ability exercised by Richard W. Meade, the president and general manager of the company. And it is because of his insisting upon a careful tabulation of all items that the writer is able to give the following operating figures. They are figures as recorded in their last available annual report.

GENERAL STATEMENT

Operating Revenue

Passenger revenue	$1,127,643.00
Other transportation revenue	22,257.38
Other operating revenue	26,750.00
	$1,176,650.38

Operating Expenses

Maintenance of structures	$2,353.96
Maintenance of equipment	275,432.79
Traffic expenses	18,452.39
Transportation	391,381.32
General and miscellaneous expenses	142,401.76
Taxes	72,766.22
Total	$902,789.02

Income Account

Operating income	$273,861.36
Other income	4,472.45
Gross income	$278,333.81
Interest deductions	36,832.60
Rent deductions	51,063.40
Net corporate income	190,437.81

OPERATING EXPENSES ITEMIZED

Maintenance	$277,786.75
Superintendence	27,665.30
Repairs to bodies	25,055.95
Repairs to running gears	40,702.95
Repairs to transmissions	30,936.14
Repairs to engines	32,823.28
Repairs to buildings and fixtures	2,353.96
Repairs to shop tools and machinery	3,186.26
Tires	51,988.43
Depreciation of vehicle equipment	53,795.76
Depreciation of shop tools and machinery	3,028.49
Other expenses	6,250.69
Conducting Transportation	$546,775.30
Superintendence and clerks	18,002.74
Starters, receivers and inspectors	19,323.51
Oilers and washer	17,244.27
Shifters and other garage employees	7,108.30
Drivers and conductors	204,226.49
Gasoline	75,568.66
Oil and waste	7,322.07
Water	649.90
Light for buses	8,080.72
Light, heat and power	6,608.84
Other garage expense and supplies	4,798.59
Rent of buildings and other property	47,188.29
Damage to property	8,884.55
Injuries to persons	79,960.93
Advertising	18,452.39
Stationery and printing	907.82
Other expenses	22,452.23
General Expenses	$52,648.46
Salaries of officers and clerks	18,389.06
Insurance	2,661.57
General office expense	4,304.04
Stationery and printing	834.60
Legal expenses	14,446.35
Other expenses	16,312.61
Undistributed adjustment balance	4,299.77
Grand Total Operating Expenses	$877,210.51

EMPLOYEES AND WAGES

General Office Staff

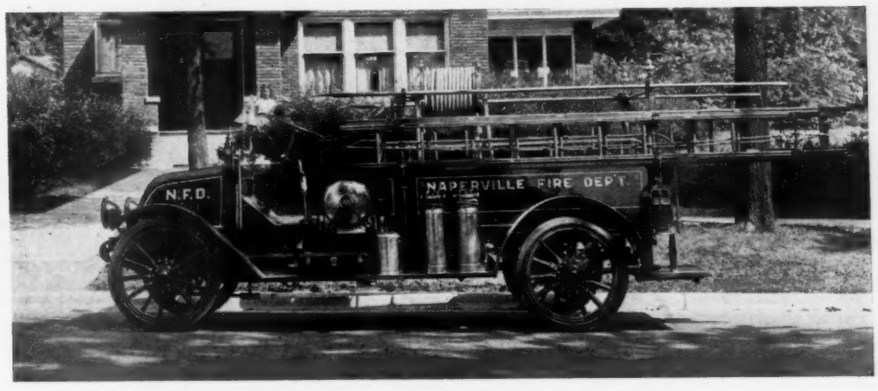
Occupation	Aver. No.	Total Compensation
General officers	5	$21,563.53
Other officers	2	4,632.26
Clerks and bookkeepers, men	28	26,674.15
Steno. and typist, women	5	4,034.40
Janitor and watchman	1.1	807.95
Messengers and others	8.5	6,104.97

Transportation

Inspectors	2.6	2,700.90
Starters	14.1	11,898.24
Receivers	2.2	1,981.30
Transfer agents	3.2	2,504.49
Conductors	126.9	89,683.58
Drivers	126.9	119,186.61
Talleymen	1.2	461.21
Tailor	.6	465.00

Car Houses and Shops

Cleaners	21.6	14,199.04
Oilers	4.8	3,483.43
Car house men	8.6	5,896.51
Carpenters	14	14,027.39
Carpenters' helpers	1.3	481.49
Blacksmiths	1	970.79
Blacksmith helpers	.9	607.67
Machinists	72.5	67,901.79
Machinists' helpers	8.9	4,597.47
Electrical helpers	3.6	3,682.56
Tinners	2.6	1,910.37
Painters	9.3	7,812.16
Total Compensation		$418,269.26



International, Model H, Fire Truck

The International Harvester Company of America, Chicago, Ill., recently delivered the fire apparatus illustrated above to the Naperville Fire Department, of Naperville, Ill. The combination hose and chemical outfit is known as the regular model FI equipment.

Why is the CCJ the only truck paper a member of the Audit Bureau of Circulations? Here's food for thought

Superior Taxicab Service Wins Public Approval

From Fifty to Three Hundred and Fifty Machines in a Little Over a Year. Company Assembles Its Own Cars. No Charge Accounts. Owners Get Bonus

By WALTER A. BERMINGHAM

IN taking the public into their confidence by frankly admitting that they were to give city motor passenger service in Chicago in as near an approach to perfection as would please the most exacting patron of the superior "Safety First" taxicab service, the Yellow Taxicab Co. began operations on August 2nd, 1915, with 50 taxicabs.

They promised the public that with its approval and support they would give Chicago the best and lowest passenger rate service in the world, and the 350 Yellow Taxis now operating on the city streets are the very best evidence of public approval and that their promises have been made good.

Last January the company planned the finest garage in the world, to be erected on East 21st Street, 131 ft. west of Michigan Boulevard, or "Motor Row," and they are now occupying it as a garage and as their main station, with a capacity for 500 taxis.

The building is four stories and basement, solid concrete construction, faced with brick, fireproof and it is a daylight building, so much so that on all sides windows occupy so much space that the inspector assigned by the insurance companies to measure every pane of glass, even the skylights on the roof, was two days on the job. Wide alleys are on each side, 200 feet deep, and the rear of the building, 100 feet wide, abutts on a wide alley.

Each of the four floors is equipped with a hydraulic gasoline system, operated entirely by water pressure and also with wash racks with accommodations for four cabs.

There are four entrances or driveways on the street floor, two in the front and two in the rear. A part of the installation is a switchboard, accommodating eight operators at a time, into which 33 trunk line telephone lines are installed, which lead to the main office. An automatic telephone board, with 28 trunk lines connecting with the same number of stations distributed over the different sections of the city, is installed.

On the street floor space is also given for a large tire storage room and an exceptionally large battery room, where all batteries are manufactured, repaired and charged. The floors and work benches of the latter room are indestructible, as they are entirely of concrete. Waiting rooms and dispatchers' offices and also the manager's office are on this floor.

The Mezzanine Floor Accommodates Eight Hundred Chauffeurs

Immediately above the street floor is a mezzanine floor with accommodations for over eight hundred (800) chauffeurs. For the benefit of the chauffeurs a gymnasium and facilities and equipment for different kinds of games and amusements is a part of the installation. Each chauffeur is furnished with a sanitary steel locker for his wearing apparel, and provision is made for suitable and necessary dressing rooms. Shoe polishing stands, with attendants, are furnished free of charge to all employees; also, in addition to other accommodations for cleanliness, four shower baths are provided.

Executive Offices on Second Floor

The executive and general offices and fireproof vaults for the storage of lost and found articles left by passengers are on this floor. The remainder of the floor, with the exception of space for the inspector's offices and wash racks, is used for cab storage.

Paint Shop on Third Floor

The paint shops on this floor are 100 ft. wide by 90 ft. deep, where a perfectly-equipped Standard Varnish Co. drying room is installed. An advantage of this room is the possibility of painting a Yellow Cab to be ready to go into commission in 60 hours. The remainder of this floor is used for cab storage, except the space occupied by a fireproof stockroom for paints and oils.

Variety on Fourth Floor

The machine, trimming and wood-working department, with the enameling room (the latter is dust and fireproof), and also a fireproof room which contains forges, tinners' fire pots and an acetylene welding outfit, are on the fourth floor. This floor space is occupied by a parts stockroom, with shelves and bins entirely of steel and interchangeable, so arranged that any size bin required can be set up in a few minutes. In this part of the building, with the exception of the fireproof room and the enameling room, all flooring is of hardwood, maple, thus avoiding the foot troubles which workmen suffer while employed on cement floors. There are also several shower baths on this floor, as well as provision made for six Harvester washstands accommodating 12 employees each at a time. Hot and cold water is furnished throughout the building. The latest of labor-saving devices have been installed, such as electrically driven forges, a De Vilbliss spraying outfit for enameling fenders, electrically driven sewing machines, exceptionally large enameling ovens of the "safety first" type—approved by the fire underwriters, lathes and other machine-shop equipment of the most modern design and for all mechanical requirements, together with all danger preventing devices recommended by the State Factory Board of Inspection.

"Safety First"

The Yellow Taxicab Co.'s motto means with them efficiency, courtesy and absolute fairness to both their patrons and employees. Every cab is equipped with a governor, limiting maximum speed to 20 m.p.h. All drivers are taught to drive by the company, they keeping in operation three school cabs every day.

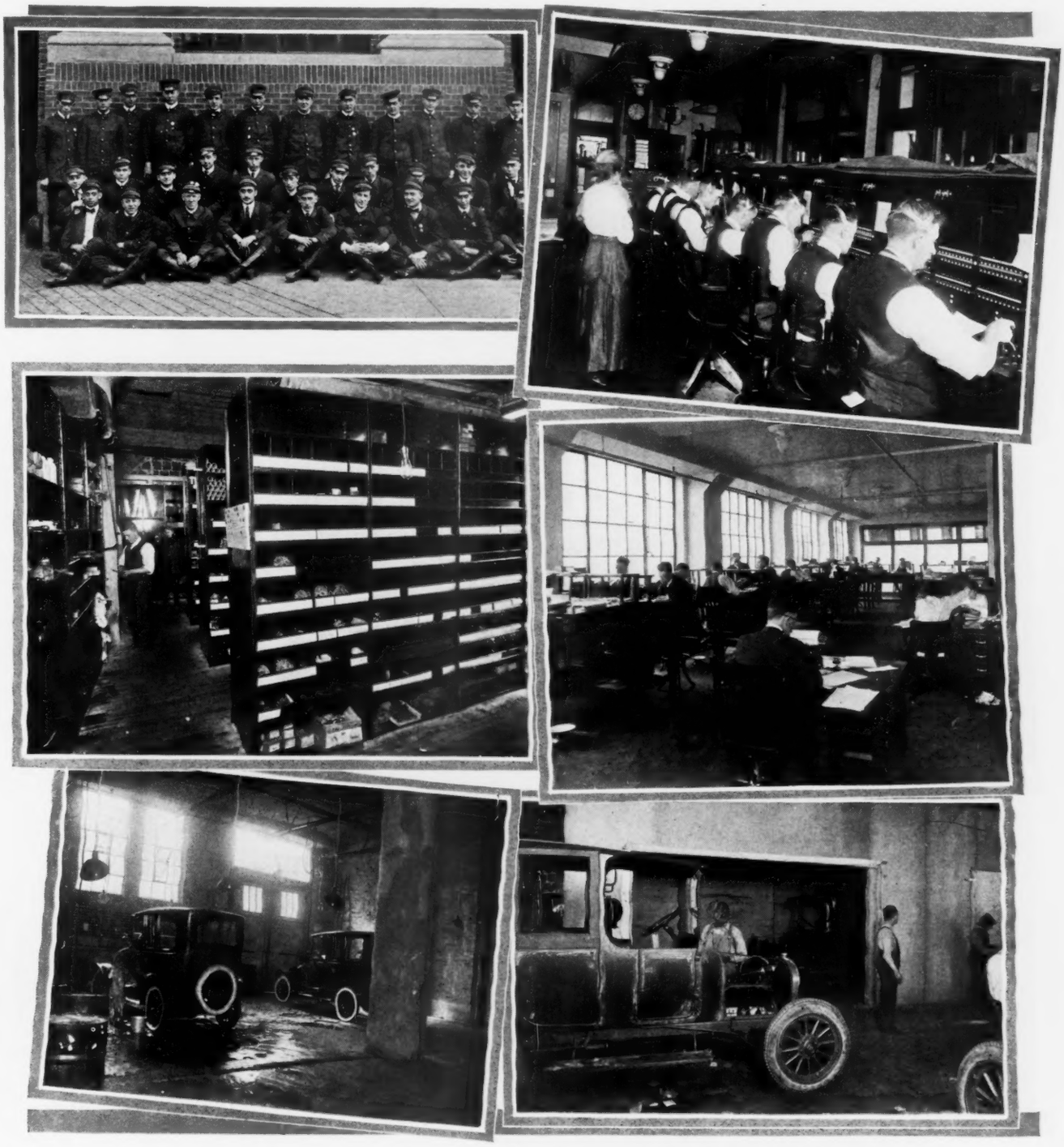
Any married man, over 24 years of age, with good health, good eyesight and a

Advertising appropriations bring greatest returns when expended in the CCJ

clean record is taken in and made a chauffeur. The record of each driver is gone into thoroughly before employment by a staff of investigators, who look up his habits, home life, neighborhood reputation, as well as other references. Every three months investigators follow him up again to learn if he is living as clean a life as when he entered the company's employ. The 24-years-of-age requirement is exacted because it is believed at that age steadiness of habits, either good or bad, have been formed. Another requirement is that in case of accident, or trouble to a cab on the street, a brother Yellow Cab driver approaching must stop and assist.

The following rules are rigidly exacted. Cleanliness is insisted upon. Inspectors are employed to watch and exact it. The chauffeurs before going on duty must be clean-shaven, wear a white collar and have their shoes and puttees polished. Drivers seen going into a saloon while in uniform are discharged. Drivers must turn corners on second speed. Quarreling or fighting is prohibited, as all disputes are settled in the manager's office. Drivers are compelled to give a receipt and say "Thank you" to every passenger. This rule is imperative —when rain falls, no matter what the hurry, to stop and put up the windshield and put on chains.

The Yellow Taxicab Co., besides being an organization of efficiency, is also one of harmony. Both are fostered, encouraged and promoted by John Hertz, vice-presi-



Views of the Interior of the Yellow Taxicab Company's Buildings and Chauffeurs

The upper left shows a group of the chauffeurs; on the right, the switchboard, with eight operators busy. Middle left is the parts stock room; middle right, the office; lower left, the washstand, which accommodates four cars; and the lower right view is the paint shop drying room

Interesting and helpful information; reputable advertisements—that's the CCJ

dent and general manager, as, not only in numerous instances has he assumed the function of a father to the organization, but he also is the judge, the jury, the umpire, and has even gone farther—he has also been the banker to many of the boys, when, among other troubles they have taken to him through his always open door, they come with their financial ones. In one case he loaned $500 without interest, to a chauffeur.

The company stands by the men in all cases where they are right, furnishing legal assistance and going to any expense to protect them. For instance, a driver was shot in the hand by a passenger, an auto bandit, and the company paid him $3 a day while he was laid off due to the injury, during which time the driver did a little detective work on his own account and caught the bandit, for which the company paid him a reward of $1000. Another driver, who secured the arrest and conviction of four law violators, was rewarded by the company with $250.

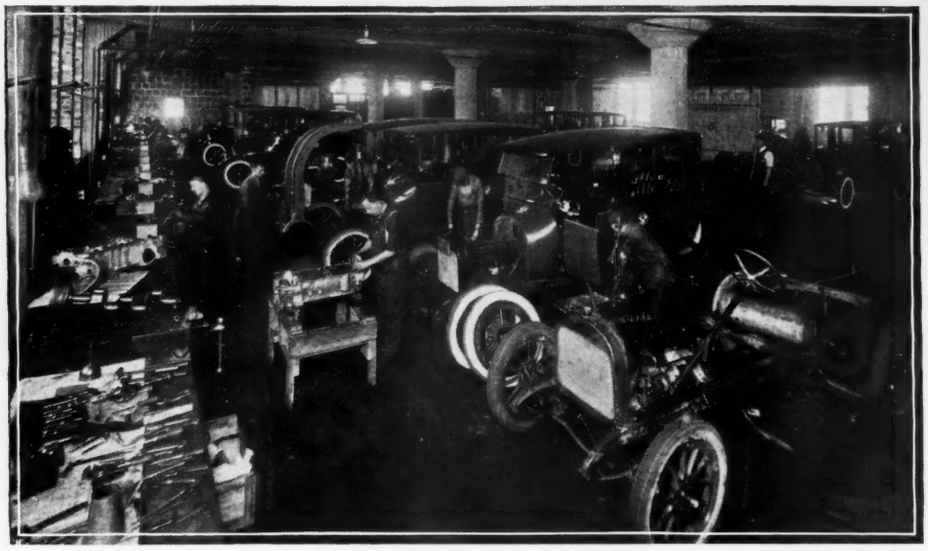
Business Policy

The Yellow Taxicab Co. does a cash business; there are no charge accounts. Every Friday is pay-day for the chauffeurs, whose pay is 20 per cent. of the fares for the week. The week before this article was written, 20 drivers earned over $30, 74 over $25, 163 over $20. In addition to this every six months 20 per cent. of the earnings of the company is divided among the chauffeurs according to the amount of money they each turn in. The division for the first year's business, divided among the men as bonuses, was $25,743, making the allotments for each participant between $280 and $300.

The working time for a driver is 11 hours daily, with one day off every two weeks.

The Yellow Taxicab Co. is really a manufactory, as they assemble all their cabs, repair them in all parts—chassis and bodies, do their own upholstering, painting, all of which work is under the supervision of Paul H. Geyser, chief engineer.

Twelve chauffeurs from this company went to the front with the Illinois National Guard. One has returned, and the company has kept them and will keep them on their payroll until the War Department orders them to return to civil life.



The upper illustration shows the well-lighted and solidly-constructed main floor of the garage. On the left is seen the repair shop.

Electrical Lifting Device Facilitates Rapid Delivery

The first heavy-duty truck with a special dumping body to be purchased in Grand Rapids, Mich., has been secured from the United Motor Truck Company by the A. Himes Coal Company. It has a capacity of five tons. By means of an electrical lifting device the driver has but to push a button to drop the entire load of a car. In a recent trip the driver left the company's yards, made a run of several blocks, unloaded and returned to the yards in seven minutes. The speed of the truck, together with the facility for unloading, has warranted the discontinuance of two teams. The entire delivery department of the company will later be motorized.

The CHILTON ideal—honest circulation; results to advertisers—fully exemplified in the CCJ

Statistics Reveal Big Demand for the Light Delivery Cars

Unusual Opportunities Presented to Dealers in Commercial Cars of One Ton and Under. Light Delivery Necessitates New Selling Methods

By C. P. SHATTUCK

STATISTICS of the commercial car industry compiled to January 1 of the present year show that the pendulum is swinging toward the light delivery car and that the growth during the past six months has exceeded the expectations of the most optimistic. This is particularly true in New York City, the hub of the shopping universe, where the ratios of sizes of horse drawn vehicles and trucks can be accepted as indicating the type and capacity of motor vehicle that will have the largest market in the future. The demand for the light delivery car is almost pronounced. Figures supplied by the Secretary of State's office show that during the fiscal year ending October 1 the gain in commercial cars is nearly 10,000 and that over 40 per cent. consists of converted pleasure cars. No figures as to the number of cars of 1-ton capacity and under, strictly commercial vehicles, are readily obtainable, but it is estimated that these are about 30 per cent.

That the manufacturers of commercial cars believe that the light truck will best meet general requirements was evidenced by the statistics compiled to January 1 which are presented in tabular form. The figures deal with models of from 600 lbs. to 7½ tons capacity. Both gas and electric vehicles are included.

Capacity	Gas	Electric
600 lbs.	1	0
750 lbs.	3	2
800 lbs.	4	0
1000 lbs.	25	13
1200 lbs.	4	0
1500 lbs.	41	1
1 ton	71	10
1¼ tons	5	0
2 tons	135	10
2½ tons	17	0
3 tons	41	1
3½ tons	56	7
4 tons	18	1
5 tons	41	8
5½ tons	3	0
6 tons	12	3
6½ tons	1	0
7 tons	5	1
7½ tons	3	0

As may be noted vehicles of 1-ton capacity and under constitute about 30 per cent., and although the 1-ton truck leads in this division the 1000 and 1500 lb. capacity cars total 66 against 71 for the 1-ton models. Approximately 27 per cent. of the 1916 models are mostly 2-ton (30 per cent. from 2¼ to 5 tons, and 13 per cent. 5-ton and over. The gain in the 1000 and 1500 lb. capacity models is remarkable, and that the increase will be more pronounced by the time the 1917 statistics of the industry are compiled, is a contention that is borne out by the announcement by manufacturers of additions to their line of trucks of these capacities. During the past six months the majority of entrants in the commercial car field announce that they will confine themselves to the production of a 1000 lb. capacity chassis.

Reasons for Light-Car Industry

The rapid growth of the light delivery car industry is due to a number of factors. The contention that the truck of large capacity was the logical solution of transportation problems is apparently a thing of the past, although it is true there always will be a demand for cars of maximum load capacities, but these will be in the minority. The fact that the average business man, particularly the retailer, has been educated to the utility and economy of the automobile, and that competition has compelled him to adopt the vehicle affording rapid and dependable service, are, according to the leading dealers in New York, factors responsible for the rapidly increasing demand.

Another factor responsible for the large increase of commercial vehicles in New York City during the past year is the exploitation of the converted pleasure car and the Ford chassis equipped with a delivery body. If figures relating to these types were readily obtainable they would furnish interesting food for thought, and when it is estimated that over 4000 are in service it indicates that the class of buyers, believing in the economy of cheap first price is to greatly exceed those purchasers who prefer the best that is obtainable or the intermediate class who demand substantial and dependable machines with a cost midway between the two. There is no reason to believe that any one particular type will enjoy a monopoly, no matter how low its cost, but some dealers in New York believe that they cannot successfully compete with the low priced delivery car. The majority, however, view the cheap delivery car as educational, believing that it is doing missionary work, and that ultimately the majority of the users will utilize high-grade machines.

Competition Necessitates Motor Installation

It required no lengthy investigation upon the part of the writer to determine that the majority of business concerns, making their initial investment in the light commercial car, have been largely influenced by the fact that in order for them to meet competition their transportation facilities must be equal to those of their competitors. This is a condition that will apply to a large number of concerns who have wholly relied upon the horse drawn equipment to make deliveries and still continue the use of teams to handle the bulk of their business. These include a number of conservative concerns who are slow to adjust their haulage to meet present conditions, and have placed one or even two automobiles in service with a view of making a practical comparison of the utility of the units with the teams. In some instances those who have recently taken up the motor car state that they were not influenced by the economy of the automobile, that they believed that the one-horse team was cheaper, but the former was necessary as it permitted of quick deliveries in extended business zones and where frequent distribution is necessary to retain customers.

The Profits With Republic Pays for Machine

Schaack delivers butter and eggs for wholesale houses, covers New York and Brooklyn, and has taken over deliveries formerly made by teams.

Everybody who is anybody in the truck industry reads the CCJ

In some lines the proprietors claim that the one-horse vehicle best serves their interests, particularly on short hauls, but in several instances it developed that the methods of delivery were based upon the capabilities of the horse drawn equipment. As a result the car stood idle a number of hours each day when it could have been utilized to an advantage. Several of these concerns are operating their machine on the basis that it is only suited for long trips, and where they are using two cars and six one-horse teams, two of the latter could be eliminated by rearranging the routing. Under these conditions the motor vehicle is not used to above 50 per cent. of its utility because its expense goes on just the same whether the car is operating or not. While it is true that the cost increases with its mileage, the less the useful miles will cost if the car be kept going. And in cases where mixed equipments are used the horse is generally credited with being cheaper; in fact, several business concerns informed the writer that they believed that the horse was cheaper.

These statements were not based on actual figures, however, and in every instance no attempt had been made to double the work of the car, or to do so, arrange loading conditions, routes, etc., that the possibilities of the machine could be practically demonstrated. This brings up the subject of sales. It is generally conceded that there is to be an enormous demand for a truck of approximately 1000 lbs. capacity as well as a big demand for lighter units. While salesmen have a mass of data as to operation and maintenance costs, routings, etc., of vehicle transporting bulky and weighty commodities, and can advise a prospect as to the machine best meeting certain conditions, there appears to be a lack of knowledge as to the light or delivery car.

This subject is being given serious consideration by an efficiency engineer connected with one well-known truck manufacturer, and this expert frankly stated that the time is approaching when the dealer must familiarize himself with the haulage and delivery methods existing among users of the one-horse team if the automobile designed to replace the horse is to be operated economically. This contention is borne out by the statement made by the distributor of a well-known light car who said the light commercial car presents a number of problems to the sales manager and calls for methods new to the salesmen. Another dealer is making a close study of the light delivery problems, classifying and indexing data relating to the one-horse team, and has conducted a number of experimental routings with a view of obtaining reliable information.

Majority Keep No Cost Figures

Yet, despite the fact that cost figures are held to be important, it is surprising the large number of New York business concerns ignoring cost, and who value the motor vehicle because it affords facilities to best serve their customers. Others hold that frequent distribution of their products attracts custom, while the majority favor the motor car because considerably more territory can be covered than with the horse unit. In a number of instances where mixed equipments are used, and where an intelligent comparison could be made, it was stated that the car was doing double and triple the work formerly accomplished by the horse. These conditions, obtained with the majority of users interviewed by the representative of the COMMERCIAL CAR JOURNAL and a sufficient number of trades or concerns were called upon to obtain variety.

Some Interesting Light Delivery Installations

Samuel Stander, proprietor of the Bushwick Brass Bed Co., 70 Troutman Street, Brooklyn, purchased a 1000 lb. capacity Vim chassis some four months ago and fitted a special body having the following dimensions: Space in back of driver's seat, 7 ft. 6 in.; width, 5 ft. 5 in.; height, 8 in. This body is well adapted to the transporting of brass beds for its permits of easy and convenient loading. In stormy weather the goods are protected by oil duck curtains. The average load carried is from seven to 10 beds which weigh about 100 lbs. each, and the car is driven about 20 miles a day. The territory covered includes greater New York, and Mr. Stander says he covers three times the territory he did with a team of horses, and that his business has been increased, largely due to the better service given his trade. He considers his Vim a profitable investment.

An instance where a hustling young man built up a profitable business by displacing his horse drawn wagon with a 1-ton truck is noted in the case of A. Schaack, who delivers butter and eggs. Owing to the fact that his territory was limited because of the capacity of the horse, he investigated the possibilities of the truck, and finally purchased on time payments a 1-ton Republic. With the truck he is able to cover all New York and Brooklyn, averages from 50 to 75 miles a day, and has so increased his earnings that the truck has paid for itself. With the horse equipment the distribution of butter and eggs to the retailers was limited, and within nine months Mr. Schaack has taken over from the wholesale house a number of routes formerly covered by other horse drawn equipment.

In April the Washington Market, butchers and poulterers, maintaining two stores one on Ninth and Third Avenues, placed in service a 1-ton Diamond T truck. This concern deals largely with hotels and restaurants, also supplies a large retail trade. The truck is being used to a good advantage as it is employed to haul from the wholesale places down town and from the freight terminals, as well as to the hotels where quantity deliveries are made. I. Frank, the head of the company, stated that the truck is not only doing the work of a two horse team it has replaced, but that of other vehicles. The service rendered has been excellent.

An instance where experience seemingly demonstrate the tendency to use light trucks is noted in the case of J. H. Remick & Co., music publishers, 219 West 46th Street. This concern has utilized trucks for the past six years, employing them to haul cases of music from the freight terminals and for delivering to the various jobbers in the city. Most of the music is received from the printing plants located

What One New York Dealer Says:

"The streets in New York are very congested, and as it is not practical to confine haulage to big trucks alone, the horse must be replaced with the automobile, which is not only faster, but the load can be started much quicker than with the horse. Not only in moving under normal conditions does the truck move three times faster than the horse, but it occupies but half the space needed by the animal team, which is valuable. To house the one-horse wagon, the harness, hay and grain, and stable the horse, requires about two and a half times the space needed for the automobile, which, if properly used, will do twice the work of the team. This means that a fifteen hundred pound or one-ton truck will occupy one-fifth the room needed for the horse equipment, and, if the same line of argument be applied all along the line, four-fifths of the space now devoted to the unsanitary stable could be used to erect business blocks.

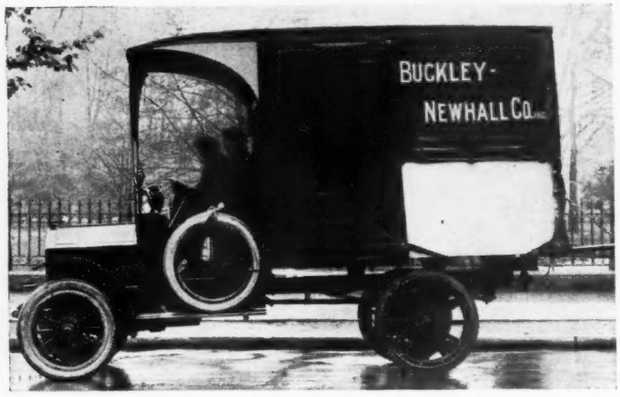
"Some day the business men of this city are going to wake up to the fact that the horse must go, for it is largely the horse that is responsible for the congestion existing at the freight terminals. What we need here in New York is a system at the freight terminals that will permit the trucks to obtain their loads without being mixed up with teams. There are thousands of tons of light merchandise hauled from the freight terminals by horses, and if these were replaced by small trucks, these same trucks could also be used for delivery work, thereby eliminating two or more horse-drawn equipments now in use."

Plenty of the right kind of circulation means quantity results to advertisers in the CCJ

Firestone Leads by Big Majority
MORE Firestone Truck Tires, by far, are in actual use today than any other one make.
The fact that truck owners of longest experience give this marked preference to Firestone is proof of "Most Miles per Dollar" and satisfaction. The Firestone combination of wearing quality with resiliency insures this service.
There is a Firestone truck tire for every road, load and condition, and a Firestone Service Station in every large trucking center with specialists at your command, to advise you. Call the station nearest you. Or write us for details and low prices.
Firestone Tire & Rubber Company
"America's Largest Exclusive Tire and Rim Makers"
Akron, Ohio—Branches and Dealers Everywhere
E. T. Seidel
Firestone
TRUCK TIRES

in the west. In place of the heavy cars the company is now employing a 1500 lb. Commerce which in the three months' service best meets the requirements of the company. The car averages about 40 miles a day and the work of collection and delivery is greatly facilitated.

Vast quantities of linens are soiled and the work of cleaning is an industry in itself in New York. In this line of business the truck of 1500 lbs. capacity and less has proven a great time saver as well as its utility. The Twentieth Century Laundry Co., Inc., 251 Third Avenue, caters to restaurants and private houses, and four months ago placed an order for a 1500 lb. capacity truck with the Republic Motor Sales Co., distributors of the Republics. So successful was the truck that a repeat order was forthcoming in two months and two more have been placed in service recently. These machines are employed both for collecting and delivering.



Furniture Company Adopts Lighter Truck

The Buckley-Newall Company, finds a one-ton Garford better adapted for hauling from freight terminals and for delivery than a heavier car.

The Roamer Supply Co. are in a similar line, laundering coats, aprons and towels, the collection and delivery of which necessitates many stops. The success of this car, which is a Studebaker 1000 lb. capacity, demonstrates the effectiveness of the motor vehicle for short hauls. It covers New York, including the Bronx, and is doing work that could not be accomplished by three one-horse teams. This concern uses nothing but motor delivery.

The N. Delamanaras Co., 96 Roosevelt Street, is an example of how essential to business success is frequent distribution of merchandise even with oriental products. This concern supplies the Greek trade with those delicacies dear to the Greeks, and for this work uses a 1000 lb. capacity Vim. When asked as to how the efficiency of the car compares with the horse formerly employed Mr. Delamanaras said, "I have used a horse for the past 10 years in my business and although the car has been in service but a month I have increased the radius of my delivery about 30 per cent. Compared with the cost of the horse and wagon the costs of operation or delivery costs have been decreased 17 per cent. As soon as I work out a new routing or delivery system I believe a great saving will be effected."

Some idea of the service afforded by the light delivery car over the poor streets in New York is afforded by the work accomplished by an 800 lb. capacity Willys-Overland in service with the Griffin Mfg. Co., 69 Murray street, makers of shoe polishes. This concern supplies the local trade as well as exports. The machine was placed in service a year ago this summer and its speedometer shows a reading of 16,000 odd miles. Not only is the car used to haul material from the freight terminals, but it covers a large number of miles, making special deliveries. Three one-horse teams could not accomplish an equal amount of work.

The Van Beuren & N. Y. Billposting Co. has found it possible, by the use of trucks, to eliminate horse drawn equipment; that is, to cover two routes with one truck which formerly required two two-horse teams. The Autocar in question not only carries its equipment of ladders, paste, buckets, scrapers, etc., but a crew of four men and a driver. The car covers a territory extending from 145th to 181st Street.

The On-Time Express does a general trucking business and has a large following in the theatrical trade as the concern is located in the theatre district, on West 46th Street, opposite the White Rats Club. Because the truck affords adequate service where time is a factor it is employed for theatrical transfer, and on Wednesday and Sunday nights, when the companies move out of the city, it accomplishes work that would require several teams. Trips are made to Brooklyn and in the summer to Coney Island, and very frequently train connections are made that would not be possible with the slower moving horse. The vehicle employed is a 1-ton Garford.

On September 23 the first of a fleet of five special ambulances for service in the Woman's American Supply League, New York City, was placed in commission. This organization includes among its officers and executive council, the wives of government, State and city officials, and when the infantile paralysis epidemic overtaxed the ambulances of the city, the league placed an order for five 1000 lb. capacity Studebaker chassis. These are fitted with a special body and have a capacity for 20 children, a trained nurse and a driver. The seats are so arranged that the feet of the children are supported, and the vehicles are to be used in carrying the children to their homes after they have been discharged from the hospitals. The hospitals have been unable to do this.

A 1-ton Republic truck not only solved a delivery problem for W. J. Jaeger, manufacturer of tin cans and boxes, but enabled him to turn a loss into a profit. Among the large concerns supplied with tin boxes is Arbuckle Bros., who use vast quantities of containers for their coffee. In delivering three-horse drawn wagons were employed, and the cost of these proved a loss as the margin of profit on the Arbuckle contract was small. The Republic truck was placed in service fourteen months ago and the balance is now on the right side of the ledger.

Autocar Replaces Two Two-Horse Teams

This machine, used by bill posting company, does the work formerly requiring two teams and two crews of men, and has eliminated an extra route.

Even in the restaurant business the truck is proving its efficiency. The Cafe des Beau Arts, better known as Bustanby's, finds a 1-ton Bessemer of greater value than a two-horse team. This truck is not working to its capacity, however, being employed but 8 hours a day, during which it hauls supplies from the warehouse and from the markets.

An example of the possibilities of increasing the radius of delivery and replac-

PIERCE
GOVERNORS

are little guardsmen, always on duty, to see that drivers do not operate motor trucks at reckless speeds. They conserve the owner's investment, eliminating unnecessary repairs and excessive cost of maintenance.

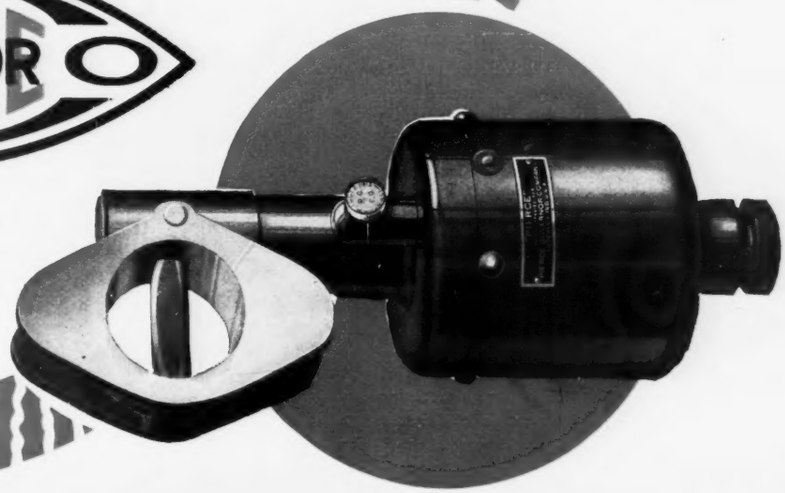
These governors can be easily and quickly installed on any vehicle propelled by an internal-combustion engine, and will control either the vehicle speed or the motor speed, as desired.

Commercial car manufacturers who have the interests of their customers at heart and who install on their cars none but the best accessories obtainable, endorse and use PIERCE GOVERNORS.

Don't be satisfied with any other governor. You'll find a Pierce on all the best trucks.

PIERCE GOVERNOR

Anderson, Ind., U. S. A.



When Writing, Please Say—"Saw Your Ad. in the CCJ"

ing horses is noted in the furniture business where large retail dealers haul from the freight terminals and warehouses as well as deliver to the retail trade. Among the successful users of trucks in this line is the Buckley-Newhall Co., Inc., Brooklyn, which concern finds a 1-ton capacity Garford, fitted with a special body, affords efficient service. The light truck is also favored by F. Cristaino & Co., an Italian importer of wines, liquors and olive oil, located at 120 Mott Street, New York City. This 1-ton Garford hauls from the steamship piers and delivers work that was formerly accomplished by two-horse units. As

Leather Manufacturer Dispenses With the Horse

A one thousand pound capacity Vim is employed for hauling material as well as delivering to the trade.

in the case with other concerns dealing in similar products, the company finds the truck has increased the radius of deliveries and saves considerable time.

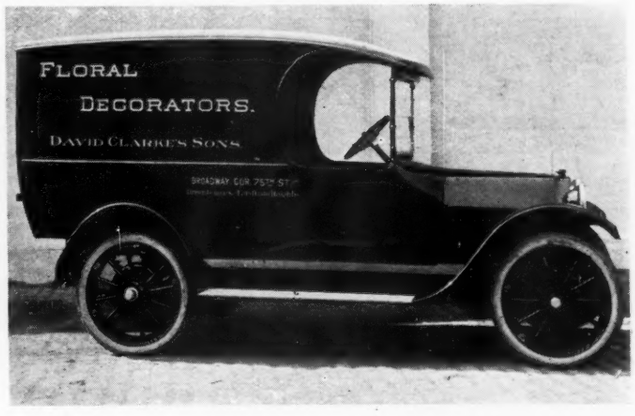
The superiority of motor vehicles over horses in municipal service has long since been demonstrated and this field has been broadened by the demand for a high speed combination hose and chemical wagon to replace the one and two-horse drawn equipment. This is particularly true on the outskirts of the city or suburbs where the demand appears to be for a 1500 to 2000 lb. capacity chassis capable of maintaining high speeds with safety. These vehicles are equipped with special bodies carrying a complete equipment, including ladders, hose, chemical tanks, etc.

Several manufacturers and dealers in leather goods, novelties, etc., have replaced their one-horse delivery vehicles with the automobile, and in several instances the heads of these concerns have found that their costs of deliveries have been considerably reduced. One well-known concern on Fifth Avenue has given a 1000 lb. Vim car a severe test and has found it satisfactory in every respect. The Katz Bros. Leather Goods Co., manufacturers of dress suit cases, traveling bags, etc., is another example of the automobile replacing the one-horse team.

There is hardly a trade that is not represented in the users of the light delivery car, and the prospects for future business are exceedingly bright. One dealer, who has over 300 1000 lb. capacity cars in service, says that New York City affords exceptional opportunities to exploit a light car of from 1000 to 1500 lbs. capacity. He believes that not only will concerns, maintaining large trucks, adopt the light car, in that the smaller vehicles will reduce transportation costs in handling small material, but that thousands of concerns who contract with small trucking or express companies to deliver their merchandise, will eventually become users of automobiles.

"It is interesting to note," said this dealer, "the prospects that are turned up by our salesmen. There is hardly a day but what a salesman will come to me and ask if I have any data as to what our car will do in such and such a business. Many of the inquiries come from small concerns who realize to meet competition in their lines they must adopt the automobile. It is surprising to note that the majority of this class of trade wants to compare the car costs with those of the one-horse wagon, and in some instances it is difficult to convince the prospect that to obtain economy from the car it must be kept working, that either more trips must be made each day or greater quantities of merchandise must be delivered. We are obtaining cost figures as rapidly as possible in this branch of the automobile industry which is in its infancy. I anticipate a record-breaking demand for the light car in 1917 and am planning my sales campaign accordingly."

Another dealer believes that the one-horse vehicle must sooner or later give way to the automobile in New York because the latter is the only logical solution of the traffic problems. "The streets in New York are very congested," said the dealer, "and as it is not practical to reduce the number of vehicles nor confine haulage to big trucks, the horse must be replaced with the automobile which is not only faster, but the load can be started much quicker than with the horse. Not only in moving under normal condition does the truck move three times faster than the horse, but it occupies but half the space needed by the animal team which is valuable in a city like New York. To house the one-horse wagon, the harness, hay and grain, and stable the horse requires about 2½ times the space needed for the automobile which, if properly used, will do twice the work of the team. This means that a 1500 lb. capacity or 1-ton truck will occupy one-fifth the room needed for the horse drawn equipment, and if the same line of argument be applied all along the line, four-fifths of the space now devoted to the unsanitary stable could be used to erect business blocks. As to the costs of the delivery car versus the horse, if one will investigate I am willing to wager he will find that its costs a pretty penny to maintain horses in this city. When we dealers get down to brass tacks in analyzing the replacement of the one-horse teams with cars, a lot of concerns that talk about the cheapness of the horse in New York are going to be some surprised. Some day the business men of this city are going to wake up to the fact that the horse must go, for it is largely the horse that is responsible for the congestion existing at the freight terminals. What we need here in New York is a system at the freight terminals that will permit the trucks to obtain their loads without being mixed up with teams. Eliminate 50 per cent. of the teams and the cost of operating the trucks will be decreased 100 per cent. There are thousands of tons of light merchandise hauled from the freight terminals by horses, and if these were replaced with small trucks, these same trucks could also be used for delivery work, thereby eliminating two or more horse drawn equipments now in use. And the use of the delivery car is going to mean better streets. When the business man realizes what the truck will do under favorable conditions, we are going to get decently paved streets, and sing the swan song of the horse. And that day is not far distant."



Florists are Large Users of Motor Vehicles

Practically every florist in New York employs some form of commercial car, the bodies of which are handsomely finished.

A LETTER TO DEALERS

MADE IN NEW YORK CONSULT USERS

HURLBURT MOTOR TRUCK CO.

PIONEER MAKERS OF WORM DRIVE TRUCKS
FACTORY, EXECUTIVE AND SALES OFFICES
THIRD AVENUE AND HARLEM RIVER
NEW YORK, December 2nd, 1916.

TELEPHONE
MELROSE 181

Gentlemen:-

To be recognized as the highest quality motor truck in New York is a remarkable tribute. Our trucks are better and more favorably known in New York City today than those of any other manufacturer, and this is principally true because our organization has been working consistently night and day with the unalterable idea of producing the best motor truck in the world. We list among our users, such concerns as: Standard Oil Co. of N.Y., John Wanamaker, Tiffany Studios, Hecker-Jones-Jewell Milling Co., Federal Sugar Refining Co., and N. Y. Police Department.

For the past five years our metropolitan demand has exceeded our output and it is only within the last two months that we have been able to allot a limited number of these Hurlburt Trucks for domestic distribution. We have been greatly encouraged in starting our national campaign by the vast number of inquiries constantly coming to us from all parts of the country, for information about our truck.

We are now ready to establish business relations in a number of the large cities of this country, and from the information received by us, it would seem that you occupy a most fertile field for the future development of motor trucks. We are confident that our record of success in New York will be duplicated in your territory. We have carefully prepared our distribution plan which includes considerable aid from our advertising and sales department, and will be glad to send you this plan at your request.

Due to the fact that our allotment of cars for your territory is limited, and that we are daily receiving inquiries as to this distribution work, we ask that you write us at once if you are interested in securing full particulars.

Very truly yours,

HURLBURT MOTOR TRUCK COMPANY

SEND FOR DELUXE CATALOG

In some instances the demand exceeds the supply in light trucks, and dealers are experiencing difficulty on obtaining deliveries. At some factory branches of concerns producing a light delivery car, as well as pleasure vehicle, the demand of the former has been such as to make necessary separating the commercial from the pleasure.

R. G. Remington, in charge of the commercial department of the Reo Motor Car Co., stated that so rapidly has the demand increased for delivery cars that the branch is about 100 chassis behind in its orders. A similar condition exists at the New York branch of the Studebaker Corp. of America. Here the commercial car has been placed in a separate department, managed by C. D. Ferguson, who is building up a sales organization necessary to meet the growing demand for delivery vehicles.

The tendency toward the lighter commercial car has greatly stimulated the body building industry and there is a big demand for high grade bodies, particularly the panels, types favored by the retail stores in the shopping districts. Many of these designs are noticeable for their rich finish and appointments, particularly those utilized by Fifth Avenue tradesmen dealing with the wealthy classes. The construction of special bodies, to meet individual requirements. is an industry by itself in New York City and vicinity.

There is hardly a dealer in vehicles up to and including 1-ton capacity that did not predict prosperity in 1917. "Gene" Herrman, distributor of the Republic line, is most enthusiastic over the possibilities for the light truck. He bases his prediction on the large number of repeat orders received where one truck was sold and the reports received from satisfied users. "A singular feature in selling trucks," said Mr. Herrman, "is the fact that the average business man using trucks is learning to care for his cars and is calling less and less for service. Many concerns are realizing the advantages derived from employing high-class drivers, men who are familiar with the mechanism of the car and are capable of giving attention to those components requiring care. The time is soon coming when the customer will only ask for the instructions governing the care of the machine, not service, for a service station will serve only for the carrying of spare parts for replacements."

All of which indicates that the representatives of commercial cars of 1-ton capacity and under anticipate unusual prosperity during the coming year. Manufacturers should not experience any difficulty in obtaining representation in New York; in fact, the supply does not, apparently, equal the demand.

Grocery Firm Retains Commercial Car After Testing Its Economy

By C. W. SHAFER

IT was just eight years ago in December that Daane & Witters, a leading grocery firm at Grand Rapids, Mich., decided to install a light delivery truck. They resolved to give the car a thorough test in their transportation department and, by a comparison of figures, determine the benefits or deficiencies. A competent driver was employed and was given charge of the machine.

For three months the truck was used in short-haul work almost exclusively. The next three months were devoted to long-haul deliveries. By a comparison of figures of the two periods it was found that the cost of operation in the short-haul work was excessive as against the long haul and, as a consequence, the truck has since been devoted to the latter phase.

For five years the machine was operated and was then turned in for $300 on a new car. During the five years it was driven 57,000 miles. The new car, in three years, has been driven slightly more than 20,000 miles. In the entire eight years, all figures considered, an average of 5 gals. of gas was used daily and an average of 3 qts. of oil a week. Each set of tires averaged 6000 miles.

The truck makes six trips daily over set routes, where before but four trips were made with two wagons drawn by four horses. Most of these trips show a mileage of from 10 to 20 miles, which, under the old conditions, would have constituted an entire day's work for the horse-drawn vehicles.

The chief virtue of the truck, according to the owners, lies in the fact that the customers can be given a service which was never possible before. This service is emphasized in all advertising and it attracts a great deal of business to the store.

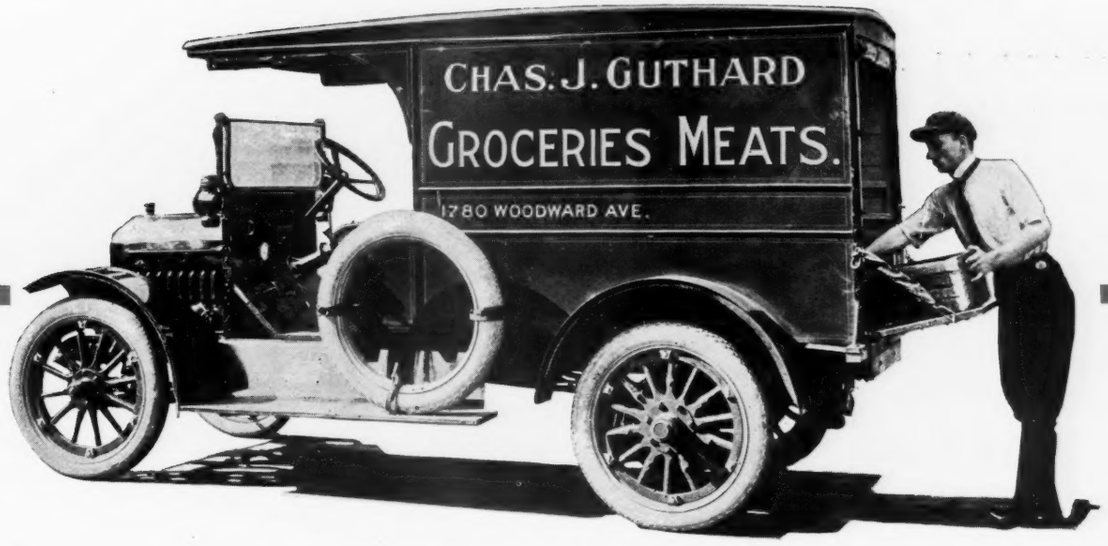
All six of the deliveries of the Daane & Witters concern are negotiated during the day. The truck leaves the store at 8 and 10 a. m., 12 m. and 2, 4 and 6 p. m. The trips are so arranged that the one truck is capable of reaching all of the outlying residence districts in Grand Rapids at least twice every day. This makes up the service that has given the firm a substantial profit.

Besides the service that the truck guarantees, the cost of operation has been decreased. In purchasing the truck the company sold four horses, thereby making nearly enough money to meet the cost. Since that time, by paying the driver a substantial salary and increasing his remuneration in accordance with his records for careful driving, they have maintained a low cost of operation as compared to the cost with the horse-drawn vehicles. At the present time two horses are required for the short-haul work. The owners believe that they are time-savers in work that is concentrated in a few centrally-located blocks. Many of the trips made by the short-haul drivers consume far more time than those of the long-haul driver, even though the latter covers from five to eight times as much territory. And he does it at a cost which is comparatively less.

The Daane & Witters truck carries a load on every trip which is larger than the loads that were once carried in the horse-drawn deliveries. On several occasions 50 stops have been cared for on one trip and on a trip just before Christmas in 1915 60 packages were delivered. It is this increased capacity and the emphatic and punctual service that leads these progressive merchants to believe that the light delivery truck can never be replaced as a medium for hauling into a district over five blocks from a commercial house. With the lessened expense and fewer details to figure in also, the worth of the truck has been established beyond any doubt.

Light Delivery Truck Operated by Daane & Witter
This grocery house has displaced horses absolutely in long-haul delivery work

Make your product pay—advertise in the CCJ



Two Fast Selling Models of the

Model 5
1000 lb. capacity
$695 chassis price

Stewart

Model 4
1¼ ton capacity
$1390 chassis price

Model 5 for light delivery and model 4 for the heavier, bulkier articles is a great combination to sell a merchant. They will take care of his delivery service in a way that cannot be surpassed for efficiency and economy.

Each truck is a big value, has earned an enviable reputation for giving economical service and is so well built that it is a consistent and dependable performer.

Stewart dealers are making fat profits with these models—you can do likewise. Write for our sales plan.

Stewart Motor Corporation Buffalo, N. Y.

Proposed Standard Specifications U. S. Army Trucks

1—The number of trucks required will be stated in the Instructions to Bidders, issued by the Purchasing Quartermaster. The prices quoted will be f.o.b. factory, and the truck must be complete in every respect, and in proper operating condition.

2—Manufacturers: Each bidder must submit a complete list of manufacturers and location of factories furnishing any part, either finished or unfinished, assembly, or accessory, which is used in the construction of the trucks, and not made in the factory where the trucks are constructed. This shall not be construed as including bar or sheet stock or structural material. If this information is not given, the proposal may be rejected, or in case the proposal is accepted, the Quartermaster Corps reserves the right to name the manufacturer and select the material, apparatus, parts, or accessories, and no others will be substituted for those named.

3—Employment of Convict Labor: In the performance of work herein specified the contractor shall not, directly or indirectly, employ any person undergoing sentence of imprisonment at hard labor, which may have been imposed by a court of any State, territory, or municipality having jurisdiction, nor permit such employment of any person furnishing labor or material to said contractor in fulfillment of this agreement.

4—Patents: The contractor shall for all time secure to the government the free and undisputed right to use any and all patented articles used in the work, and shall defend at his own expense any and all suits for infringement of any patent or patents, and in case of adverse claims under patents, the contractor shall pay all awards.

5—Interchangeability of Parts: All parts of trucks must be constructed to definite standard dimensions, and proper tolerances, so that any part of same may be replaced and properly fitted and adjusted without requiring additional tool work or machine work on the parts.

6—Materials: A complete list of all materials used in the construction of the various parts of the truck must be given, together with the chemical composition, and physical properties of same.

7—Drawings and Data: Each bidder will be required to submit complete dimensioned detail and assembly drawings, showing the size and construction of every part of the truck. These drawings must show the shop limits on all parts, and a reference number or letter referred to the list of materials, physical properties, and heat treatment, which list will also be submitted with the proposal. The drawings must be arranged in proper order for filing, and provided with a suitable index which will enable any individual drawing to be readily located. The drawings and data above referred to will not be opened publicly with the proposals, but will be considered confidential. The drawings and data may be submitted direct to the Quartermaster General, Washington, D. C., and should be referred to in each proposal which is submitted.

8—If the drawings and data herein required are on file in the office of the Quartermaster General, they need not again be submitted with the proposal. If any major changes have been made in the construction of the truck, materials used, or methods of heat treatment since the drawings and data were submitted, details of those changes should be submitted with the proposal.

9—Service Stations: Complete information regarding the location of all service stations, the floor area of each station, and the number of men employed in each service station, should be submitted with the proposal.

10—Departure from Specification Requirements: In case the vehicle on which proposal is submitted does not comply with these specifications, in every particular, the bidder must state definitely in what particulars the vehicle which he proposed to furnish does not comply with specification requirements.

11—Guarantee: Each bidder will be required to guarantee his vehicle or vehicles against defects in material or workmanship for a period of 1 year. This guarantee shall include the delivery of the defective part or parts to any point in the United States. After the installation of the new part, the defective part will be returned to the manufacturer if he so requests. The manufacturer will pay the transportation charges on all returned parts.

12—Load Capacity: The normal load capacity above the chassis, including body, shall be 4480 lbs. The maximum load capacity above the chassis, including body, shall be 5080 lbs.

13—Road Speed: The maximum road speed shall be 14 m.p.h., obtained by maximum motor piston speed on high gear of 1100 ft. per minute, limited by governor.

14—Engine: Engine shall be located in front, under a hood, and shall be of the four-cylinder vertical type, with a piston displacement of not less than 300 cu. in.

Mechanically-operated interchangeable poppet valves are to be used. Valve stems and springs are to be completely enclosed by dust and oil-proof covers which must be readily removable.

Crankshaft must not have less than three main bearings.

Circulating Lubrication

Lubrication must be circulatory, with at least 2 gal. capacity in the oil pan. There shall be pressure feed from the pump to the main crankshaft bearings. If splash is used for connecting-rod lower end bearings, it must be so controlled that the amount of lubrication is not affected by any grade up to 25 per cent., or by a certain transverse inclination. Spray lubrication for other parts of the engine will be acceptable. A screen shall be fitted on the inlet side of the oil pump of a design which will not require cleaning more often than once in each 1000 miles of vehicle operation. A screen must be provided between the crankcase oil-filler and the oil pan, and provision must be made to prevent its ready removal or intentional injury. A settling basin with drain must be provided in the oil pan, and the oil pump inlet must be above level of same.

Ignition by high tension magneto, with battery ignition for starting.

Magnetos must be gear-driven, made to S. A. E. standards, and must be interchangeable in every respect, including mounting. Magnetos must be arranged for clockwise rotation and be properly protected from water. For interchangeable magneto specifications see S. A. E. Data Sheet 36, Vol. I.

Timing Marked on Flywheel

To enable the timing of the valves and ignition to be readily set, the flywheel is to be clearly marked for the opening and closing of both inlet and exhaust valves, and for the magneto setting on full retard, and a suitable pointer is to be provided with which the flywheel marks can be aligned when timing the engine.

All ignition wiring must be protected from water and oil and mounted in such a way as to prevent chafing.

Engine must be mounted on a three-point suspension.

Oil pan must be removable without disturbing any of the main bearings or the clutch housing.

Carburetor must be so designed as to properly handle gasoline of the following specifications: (Not settled). The carburetor must be provided with a readily removable wire mesh gauze strainer in a sediment pocket under the float chamber, and sediment pocket must be provided with a drain cock of the snap-lock type.

Provision must be made to keep dust out of the carburetor air intakes, crankcase breather and oil filler.

Provision must be made to prevent oil leaks at any point in the engine.

To prevent mud and water being spattered up into the carburetor or ignition apparatus, some form of protection must be fitted between the sides of the crankcase and the frame, either in the form of cast webs on the crankcase, or rigidly mounted metal pans extending from the frame sides to the main barrel of the crankcase. Full engine shields extending clear across the frame will not be accepted.

Finned-Tube Radiator

15—Cooling System: Water cooling must be used, with forced circulation by centrifugal pump, which must be of a design to permit thermo-syphon circulation in event of pump failure.

Radiator must be of the vertical individually finned tube type, with detachable upper and lower tanks. All radiators must be interchangeable and constructed as per drawing. Radiators must be flexibly mounted, to prevent strains from any frame distortion.

A drain-cock which will drain all the water from the entire cooling system must be fitted in a location where a bucket can be readily placed directly beneath the drain. This drain-cock must have a clear bore of at least $\frac{3}{8}$ in., and must be fitted with a spring-snap lock to hold it in the closed position.

All suction hose connections must be provided with means to prevent collapsing.

Belt-driven fan shall be used, with a 28-deg. endless V belt of $1\frac{1}{4}$ in. width, and means of belt adjustment must be provided.

A radiator guard must be furnished in accordance with drawing.

16—Hood: Hood with water-proof top must be fitted. Hood must be of a type which can be completely removed or opened up wide for engine inspection or adjustment.

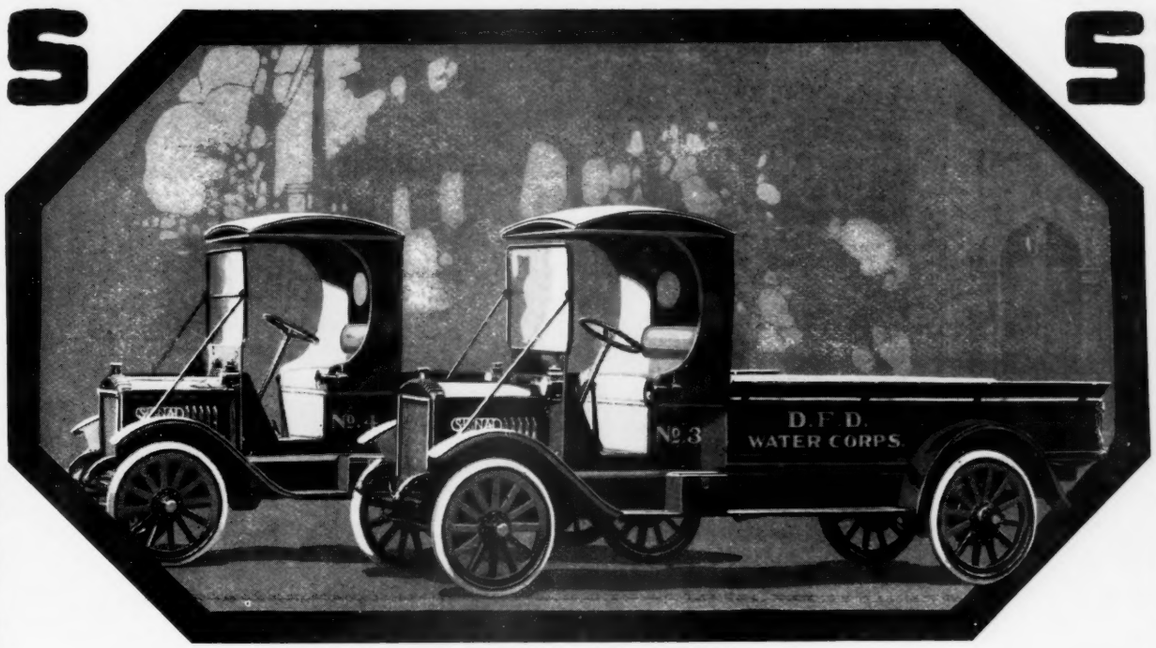
Hood must be supported independently of the radiator.

Folding Starting Crank

17—Starting-Crank: Starting-crank must be arranged to fold up when not in use, in such a location that it will not be damaged by minor collisions. Detachable starting-cranks will not be accepted.

18—Clutch: Clutch must be of dry disc or dry plate type, with either a spring adjustment, or a spring sufficiently long to

For its readers—information; for its advertisers—results. That's the purpose of the CCJ



Two Signal Trucks in use by Detroit Fire Department

"On the Job"—Always

It's the persistency in doing a good thing that counts.

A truck that is on the job one day and not fit for work the next day is a liability. It had better be dispensed with.

You sum up all the desirable virtues of a truck when you utter these four words: "It's on the job."

There is no better quality for the truck *owner*, for it means that his truck is paying its way, not eating its head off.

There is no better quality for the man-who-wants-the load, for it means he will get the merchandise on time.

There can be no better quality from the standpoint of the truck *salesman* and truck *dealer*, for it means freedom from persistent, embarrassing and costly service calls.

The phrase "On the Job" was fixed to the Signal by the owners of Signal trucks, who when asked about them uniformily replied that they were "On the Job."

Such desirable quality is a direct result of high-grade construction, specifically designed to accomplish the result expressed. There are no better units than Continental Motors, Timken-Detroit Axles, Brown-Lipe Transmissions, etc. If there were, Signal would use them.

SIGNAL

MOTOR TRUCK COMPANY

DETROIT, MICH.

automatically compensate for wear on disc surfaces.

The steel clutch discs must be properly hardened.

All thrust must be self-contained when clutch is engaged.

Clutch release must be fitted with ball bearings, with adequate provision for lubrication.

A large clutch brake must be fitted, and the entire clutch and release bearing must be enclosed in a dust-proof housing.

Plain clutch thrust-bearings will not be accepted.

19—Front Universal Joint Shaft: If universally jointed shaft is used between clutch and transmission, it must be equipped with two universal joints. Either the metal to metal or fabric disc type of joint will be accepted. In either type, provision must be made to prevent the shaft from whipping loose in event of joint failure. If the joints are of the metal to metal type, they must be thoroughly enclosed, and provision made to obtain lubricant.

Three-Speed Gearset

20—Transmission: Transmission must be of the sliding gear type, with four speeds forward and one reverse, the various gear ratios to come within the following percentage limits:

High speed	100 per cent.
Third speed	Await
Second speed	suggestions
Low speed	

Reverse: As low as or lower than low speed.

Transmission shaft pilot bearings must be either on ball or roller bearings, as plain bearings at this point will not be accepted.

Transmission must be so mounted as to be unaffected by chassis frame distortion.

Provision must be made to prevent oil leaks at any point.

Sufficient lubricant must be carried for 300 hour operation without renewal or replenishment.

21—Propeller-Shaft: The propeller-shaft must be fitted with two universal joints and a slip joint. The fabric disc type of universal joint will not be acceptable.

Universal joints and slip joint must be completely enclosed, and provision must be made for retaining lubricant.

At the front end of the propeller-shaft, provision must be made to prevent shaft from whipping loose in event of failure of the front universal joint.

22—Connection between Rear Axle and Frame: The driving connection between the rear axle and the frame may be of the type using radius-rods and torque-arm, or radius-rods only, with the springs taking the torque.

Hotchkiss Drive Taboo

The Hotchkiss drive, transmitting both torque and thrust through the rear springs, will not be accepted.

23—Rear Axle: The rear axle may be of the worm gear type, or a double reduction gear type with the reduction gearing in a central housing.

The rear axle design throughout must be such as to entirely house all the driving mechanism, and provision must be made to prevent any escape of lubricant.

Sufficient lubricant must be carried in the axle housing for 300 hours of service without renewal or replenishment.

The differential must be of a type which will drive one rear wheel when the other wheel loses traction.

24—Front Axle: The front axle must be a steel forging.

Plain or ball bearings will not be acceptable for the front wheels.

Positive stops must be provided to limit maximum steering angle of front wheels, which must be sufficient to give a minimum turning radius, measured to outside of front wheel track, not to exceed 28 ft.

Steering-knuckle tie-rod must be located behind the front axle. (Many opinions wanted on this).

Cast-Steel Wheels

25—Wheels: All wheels shall be of cast steel and interchangeable, although not necessarily identical as to design. Standardized dimensions which will be required are shown on drawing.

Wheels shall be of the proper size to take 36 x 4 in. single front tires and 36 x 4 in. dual rear tires.

26—Tires: Solid tires must be used—36 x 4 in. single front and 36 x 4 in. dual rear, S. A. E. standards, of makes either approved by or specified by the War Department.

27—Tread: Front, 56-57 in. center to center front tires. Rear, 56-57 in. center to center between dual rear tires.

28—Springs: Front and rear springs must be half-elliptic.

Springs shall be equipped with suitable rebound clips, and the second leaf from the top shall be wrapped around the spring eyes to give assistance to the top plate on rebound.

Springs with shrunk-on center bands will not be accepted.

Rubber or spring buffers must be fitted front and rear to cushion blow of frame on axle or spring center under maximum spring deflection.

29—Wheelbase: Wheelbase must not be less than 11 ft. nor more than 13 ft.

30—Frame Length: Frame length back of driver's seat available for body, 10 ft. 5 in.

31—Load Distribution: Load distribution arranged to carry between 80 and 95 per. cent. of load above chassis on the rear tires.

32—Control: Control levers, including gearshift lever, brake hand lever, clutch pedal, brake pedal, accelerator pedal and spark and throttle hand levers, must be in accord with S. A. E. standards.

Flanges must be fitted on the clutch and brake pedals to prevent the driver's feet from slipping off.

The pressure on the clutch pedal pad necessary to disengage the clutch should not be more than 90 lb. nor less than 70 lb.

33—Steering Gear: The steering gear may be of the screw and nut or the worm and wheel type.

The ratio of movement between the steering hand wheel and the front road wheels shall be such that for 360 deg. travel of the steering hand wheel, the road wheels will move not to exceed 30 deg. about the steering knuckle pivot. (Many opinions wanted on this).

Throughout the steering gear, including all steering connection joints, adequate provision must be made for lubrication, and all steering connection joints must be protected by leather boots.

Electric Lighting

34—Electric Lighting Equipment: Current for electric lighting must be furnished from a 6-volt 100-ampere hour storage battery and gear or chain-driven generator on engine.

All wiring must be enclosed in metal conduits.

The following lamp equipment will be required:

Side-lamps—combination oil and electric, with 15 c.p. bulbs.

Tail-lamp—combination oil and electric, with 2 c.p. bulbs.

Side and tail-lamps and side-lamp brackets must be interchangeable, as per drawing.

One swivel electric searchlight with 8 in. lens and 21 c.p. bulb, mounted on dash.

An electric instrument lamp with 2 c.p. bulb must be furnished, and also an 8 c.p. inspection lamp with 15 ft. removable socket cord.

35—Road clearance: The following minimum road clearances must be maintained:

Under center of front axle, 9¾ in.

Under center of rear axle, 9¾ in.

Under flywheel housing or flywheel, 13 in.

36—Brakes: Two independent sets of double acting brakes must be equipped, either both on rear wheels or with one set on rear wheels and the other on transmission line back of transmission.

Brake adjustments must be readily accessible, and must be adjustable without the use of wrenches or special tools.

All brake clevises, pins, connections and threaded joints must be subjected to a rust-proofing process on their wearing surfaces.

The design must be such that the application of rear wheel brakes is not affected by relative movement between the frame and the axle.

37—Gasoline System: The gasoline tank must be made of drawn sheet steel with welded joints and thoroughly tinned inside and out. Soldered joints will not be acceptable.

Gasoline tanks must be of 30 gal. capacity and be interchangeable, as per drawing.

Tanks must be fitted with partitions to give two 5-gal. reserve compartments, and must be equipped with a two-way cock for the reserve compartments, combined with a shut-off outlet.

Gasoline tank must be located inside seat body, and mounting devices must be attached to seat body by means of bolts.

Pressure-feed of the gasoline is required, pressure to be supplied by engine driven pump arranged to maintain from 2 to 3 lb. pressure. An auxiliary fuel hand-pump is to be furnished, mounted on the dash. (Many opinions wanted on this).

The fuel pipe from the tank to the carburetor is to be not less than ⅜ in. outside diameter, and all fuel and pressure pipes are to be properly clipped at suitable intervals, to prevent vibration and chafing.

All fuel and pressure piping is to be of copper, thoroughly annealed.

All fuel and pressure pipe connections are to be S. A. E. standard fittings.

38—Driver's Seat: Dimensions of driver's seat shall be in accordance with drawing.

The seat cushion must be covered with genuine leather and be fitted with suitable cushion springs.

Arm rests and seat back must be covered with genuine leather and padded with genuine hair.

The distance between the back of the dash and front of the seat cushion on all trucks must be 25 in.

39—Dash and Floor Boards: Dash and floor boards must be approximately the same overall width as seat body.

40—Driver's Top: Cape or buggy type of top must be furnished, as per drawing, and covered with first-class 12 oz. water-proof canvas.

A suitable boot or storm apron must be furnished, made of 12 oz. water-proof canvas.

41—Sprags: Road sprags must be fitted. These sprags must be of the triangular type and fitted with restraining chains and lifting device, as per drawing.

42—Towing Hooks: Towing hooks as shown on drawing must be attached by rivets or bolts to all four corners of the frame.

Why is the CCJ the only truck paper a member of the Audit Bureau of Circulations? Here's food for thought

ROSS GEARS

120 Truck Manufacturers use ***Ross Steering Gears***
120 Able and experienced Truck Engineers endorse them.

WHY?

Because their design is perfect.
Because their workmanship is of the finest.
Because they contain the finest material available.
Because they stand the punishment.
Because they do not break.
Because they are durable.
Because they steer easily and safely.
Because they are essentially ***Truck Steering Gears.***
Because they are well and favorably known in the Truck Industry and are a help to Truck Sales.

IN FACT

Because they do their work successfully

Write us for descriptive catalog and give us an opportunity to quote you

ROSS GEAR AND TOOL CO.

760 N. Heath St. **Lafayette, Ind., U. S. A.**

43—Body Holding-Down Devices: Chassis design must be such that body holding-down devices, as shown on drawing, can be used.

44—Paint: Chassis shall be supplied painted with three coats of lead and oil, olive drab color, of the following composition:

6 lbs. white lead ground in linseed oil.
1 lb. raw umber.
1 pt. turpentine.
½ pt. Japan drier.
1 qt. linseed oil.

Spare Parts

45—Spare Parts: The following spare parts must be furnished with each truck:

4 spark plugs with gaskets.
12 extra spark plug gaskets.
3 exhaust valves.
3 valve springs.
2 fan belts.
1 assortment of cotter pins, containing not less than 1 doz. of each size used on truck.
1 assortment of lock washers, containing 1 doz. washers of each size used on truck.
1 set of radiator hose clamps.
1 length each of all rubber water hose connections.
1 radiator drain cock.
1 box of plain hexagon nuts, to include not less than six of each size on truck.
1 box of assorted castellated hexagon nuts, to include not less than six of each size on truck.
1 box of valve grinding compound, to contain two grades.
1 roll, 1 ft. by 2 ft., of 1-32 in. thick gasket material.
10 ft. secondary or high tension cable.
5 ft. primary or low tension cable.
1 metal box containing one set of electric light bulbs used.
1 box containing 1 set electric lighting system fuses.

Tool Requirements

46—Tools: Each truck must be furnished with the following tool equipment:

1 set of open end wrenches to fit all nuts on truck.
1 magneto wrench.
1 3 in. blade screw driver.
1 6 in. blade screw driver.
1 drop-forged all steel 12 in. adjustable wrench.
1 pair of 8 in. combination pliers.
1 valve lifting tool.
1 6 lb. pinch bar, 42 in. long.
1 6 in. bastard file.
1 8 in. flat mill-cut file.
1 combination oil and grease gun with special tips to fit wheel hub, universal joints and other points requiring oil or grease in quantities.
1 socket wrench for carburetor nozzle.
1 4000-lb. capacity jack and handle.
1 5-lb. can of soft cup grease.

47—Extra Oil and Water Supply: Each truck shall be equipped with a cylindrical drawn steel welded tank with two compartments, one to carry 2 gal. of engine lubricating oil, and the other to carry 8 gal. of water, as shown on drawing, tank to be thoroughly tinned inside and outside and to be fitted with two faucets having ¾ in. through hole, snap spring lock plugs with square ends for use of wrench. No faucet handles to be fitted. This tank must be permanently and rigidly attached to the chassis.

48—Tests: Any manufacturer's model of truck designed for military purposes must satisfactorily undergo the following tests, which will be conducted by the War Department. All tests hereinafter specified will be made under a load of 5080 lbs. above the chassis, distributed as specified in paragraph 31.

49—Ability. On hard roads of 25 to 40 lbs. per ton resistance to tractive effort, the fully loaded truck must climb, on high gear, a 5 per cent. grade, and on low gear, a 25 per cent. grade. Under the same road conditions, the fully loaded truck must be able to start from a standstill in low gear on a 25 per cent. grade.

50—Fuel and Oil Consumption: On level hard roads of 25 to 40 lb. per ton resistance to tractive effort, the fully loaded truck must average, on straightaway running, 9 miles per gallon of gasoline, according to specifications in paragraph 14, and 200 miles per gallon of engine lubricating oil.

51—Cooling Ability: The cooling system must have a capacity as follows: At sea level and in an atmospheric temperature of 80 deg. Fahr. and with an initial water temperature of 150 deg. Fahr. the cooling system must be adequate to permit the engine to operate under maximum torque developed at between 600 and 700 r.p.m. in low gear, for a period of thirty minutes before the cooling water reaches the boiling point.

Are There Such Brakes?

52—Brake Performance: Each set of brakes must be powerful enough to slide the rear wheels in either direction on a hard road or 25 to 40 lb. per ton resistance to tractive effort. At least one set of brakes must be capable of handling the fully loaded truck at a maximum speed of 14 m.p.h. on a descent of 4 miles, averaging 8 per cent. grade, without firing the brake linings.

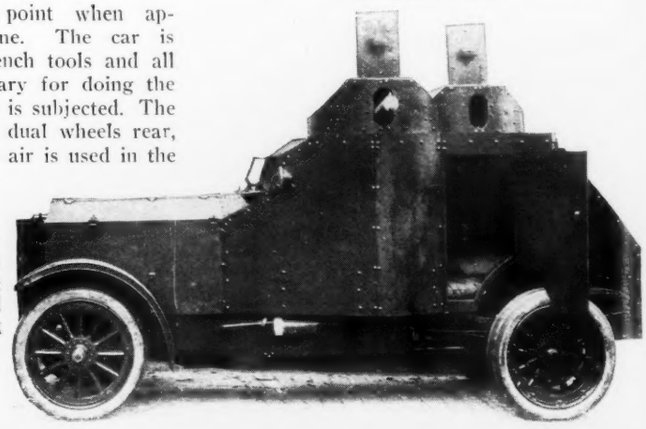
53—General Road Test: In addition to the above tests, all military models submitted will be required to undergo a 2000 mile road test, with regular enlisted drivers, carrying a maximum load of 5080 lbs. above the chassis, over give and take roads, embodying severe operating conditions.

F.I.A.T. ARMORED CARS

It is a known fact that the automobile has been an important factor in the great contest now going on, especially the armored type. In many battles along the Western front, in the Somme district and around Verdun, these armored cars have had considerable effect on the opposing forces. Many of these armored cars are Fiats from the American factory at Poughkeepsie, N. Y., the design and construction of which was an innovation even in this new class of fighting apparatus, for, although there have been several makes and types of armored cars the last two or three years, F.I.A.T. is said to be the first to design, adopt and use the double steering control from both front and rear.

The illustration herewith shows a view of a Fiat armored car. The engine is 55 h.p. type, 128 in. wheelbase, four speed transmission, multiple disc clutch. In fact, the chassis, with the exception of heavier springs, dual rear wheels, and the double steering controls, is identical with the Model 55, which F.I.A.T. is producing as its regular standard car. The chassis is equipped with the regular forward steering, so that the front driver operates the car as under ordinary conditions. There is a rear steering control arrangement, so that the second operator facing backwards at the rear end of the car can steer the car backwards and have the car under the same control as the front operator—the advantages being that the armored car can run up as close to the firing line as desired, use the turret guns, and immediately back away without having to turn around and subject the car to broadside firing from the opposing lines.

The radiator at the front of the car is armored with a "V"-shape plate, so that any bullets striking will be deflected, without doing any damage. On the chassis are mounted two rapid fire guns in revolving turrets. Both the front and rear operator are protected by shields over the slits in the armor plate, through which they may look while under fire. The front operator has an opening, which is kept open when not in danger, but which can be closed down to the minutest point when approaching the firing line. The car is equipped with sprag, trench tools and all the paraphernalia necessary for doing the severest duty to which it is subjected. The chassis is equipped with dual wheels rear, single wheels front. No air is used in the tires, the regular casing being filled with a special pneumatic material adopted by the English government, although these tires are mounted on demountable rims for quick changing.



F.I.A.T. Armored Car
This chassis is identical with model 55 F.I.A.T., except for the heavier springs, dual rear tires and double steering controls.

HERSCHELL-SPILLMAN CO., N. Tonawanda, N. Y., is about to bring out a 3¼ x 5 in. L-head 4-cylinder engine for truck and small car use, designed by E. O. Spillman. The price has not been definitely settled upon, but it will be in line with other engines of its class.

The next issue will be the Annual Commercial Car Review of Eastern Makers.

United States 'Solid Truck' Tires

The Lightest in the World and the Most Durable

It is a fact—curious perhaps—but a FACT, none the less, that the better the rubber compound used in a Solid Motor Truck Tire, the lighter that tire will be.

Volume for volume, size for size, United States Solid Truck Tires are the lightest now manufactured.

By the same token, they are the most durable—witness the testimony of hundreds of satisfied users.

United States Tire Company
1790 BROADWAY, NEW YORK

UNITED STATES RUBBER COMPANY
US
RUBBER SYSTEM
AND ASSOCIATED COMPANIES

New York Merchants Rapidly Displacing Horses

Traffic Statistics Show Forty Per Cent Increase in the Number of Commercial Cars Registered. Big Field For the One Thousand Pound Delivery Vehicle

By C. P. SHATTUCK

WHEN the books of the motor truck industry are closed for the year 1916 those optimists who predicted the greatest year in the history of the industry will, upon scanning the statistics, discover that New York City is one of the best, if not the best, field for the manufacturer to exploit his products. Business men of Greater New York are becoming fast educated to the fact that the motor propelled vehicle is revolutionizing transportation; that the commercial car is superior to horse-drawn equipment, and that in the majority of industries the motor truck is more economical than the horse.

These contentions are borne out by the statistics dealing with actual traffic and with registration. On October 1, 1915, there were registered at the Secretary of State's office 12,743 commercial cars, and October 1, 1916, shows over a 40 per cent. increase, or a total of 18,169. These figures deal with motor trucks, not converted pleasure cars, which are estimated at about 4,000, making a total of 22,169 commercial cars in service in Greater New York. These figures do not include those pleasure cars which are so registered that they may be used as well for pleasure, and refer particularly to a popular priced automobile. If data could be readily obtained as to the last-named class there is no doubt but what the figures would be interesting.

Actual traffic conditions also show the enormous increase in trucks as well as the influence upon street traffic—that is, statistics of traffic on well-paved or asphalted streets, such as Eighth Avenue, a thoroughfare favored by drivers of trucks because of its width and smooth surface. Figures compiled for ten hours at 42nd Street show that motor trucks have gained 516 per cent. in less than five years. Second Avenue below 14th Street supplies another example of the great increase in the number of trucks. Here it is estimated that the increase in commercial cars for the past five years has been 476 per cent. Using traffic statistics as a basis for computation the increase of trucks since 1911 is over 550 per cent.

Increase Due to Trucks' Reliability

It is held by some that this great increase in trucks during the past 12 months is due to the prosperous condition of the country. This is a factor that must be considered, for in prosperous times the average business man will hearken to the truck salesman, whereas when money is not so plentiful many will consider the cost of changing from horse-drawn to motor equipment, particularly when several large trucks are required. Old, experienced dealers, while admitting that prosperous times aid in selling trucks, believe that the large increase in sales during the present year is due to other factors. In the first place the commercial car has demonstrated its reliability, and sales are made with a view to obtain repeat orders, not merely to sell a truck. In other words, the efforts of the dealers to analyze the transportation problems of the prospect and to advise conscientiously, have borne fruit. Today the dealer is reaping the benefits of a business policy. In other words, the dealer is building his foundation and looking to the future. And in New York, where the overhead expenses are large, the one-sale dealer does not succeed.

That there is hardly an industry or other trade that hauls its raw material and delivers its finished product that does not utilize the motor vehicle in some form, is evidenced by the streams of traffic. Take 57th Street at Broadway, for example. Here will be seen trucks representing trades which to name would be enumerating a classified business directory. The thoroughfare mentioned is much used by trucks hauling merchandise to Long Island and returning with finished material. Similarly the ferries are crowded with motor vehicles bringing material from New Jersey, where the factories of many New York concerns are located.

The length of Manhattan and its vast population provide a fertile field for the truck dealers, particularly where successful business depends upon prompt delivery of goods, especially the finished product. It is in these fields that the motor truck has achieved marked success, due to its speed. The cost of transporting supplies in a city like New York is an economic question of great importance. Take the question of food supplies, for example. With the exception of certain articles, mostly perishable goods, the supplies are brought by boats to the piers or ferried across in railroad cars, and in many instances the freight is rehandled before it is sent up-State.

Trucks Gradually Replacing Railroad Transportation

From the freight terminals, piers, etc., the food is hauled to the wholesale houses, then distributed throughout the city. The supplying of the residential sections uptown with food means a haul of several miles to the stores of the middleman, hence to the retail trade. In some instances this means a haul of 10 to 12 miles from the piers. With the horse-drawn equipment the transportation of supplies from the middleman to the retailer consumes time, to say nothing of the expense involved. While it is true much of the supply is transported by the railroads to a point well uptown, the amount is decreasing steadily, for the large motor truck has solved this problem.

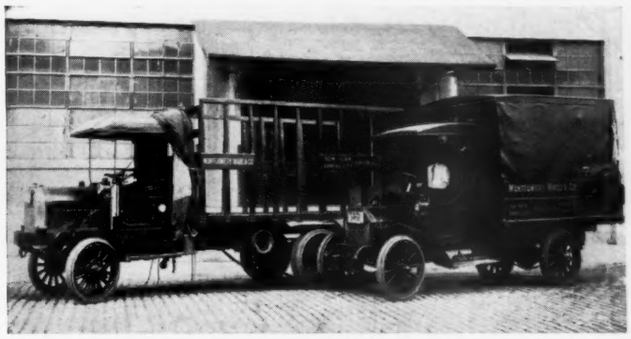
Box Manufacturer Employs Trucks

T. G. Patterson, maker of shooks and boxes, by utilizing special crate bodies, increases the scope of his business. Note the second-story method of loading

Interesting and helpful information; reputable advertisements—that's the CCJ

Not only is the wholesaler replacing his horse-drawn equipment with motor trucks, but the retailer as well. The supplying of the hotels, restaurants, lunch rooms, etc., in the business and pleasure sections of the city is now being performed by motor vehicles ranging in capacity of from 750 lbs. to 2 tons. Market gardeners of Long Island and country adjacent to New York are fast being converted to the efficiency of the motor truck, which not only enables them to reach the market much quicker, but to deliver the produce in a fresher condition than possible with former methods. Similarly fruit growers are profiting by the motor vehicle, and in some instances deal direct, eliminating the middleman.

Vast quantities of meats, chickens, ducks, etc., are consumed annually in New York, and the motor truck is a factor in the economic transportation of these supplies. Large distributors of milk utilize the motor truck, employing large capacity machines for hauling from the supply depots to the distributing stations. The supplying of the retail dealers with butter and eggs requires a small army of vehicles, and in this field the commercial car has proven unusually successful, and because of its speed a considerable larger territory is covered and in quicker time than possible with the horse.



Mail Order Company Favors Motor Transport
Montgomery Ward Company utilizes Diamond T trucks to an advantage in hauling to and from the freight terminals and warehouses

A Common Occurrence in New York About October First
Motor moving vans are replacing horses. They occupy less space in the streets and facilitate the changing of residences for which the New Yorker is noted

Moving Done Largely With Trucks

One of the fields in which the truck is replacing the horse-drawn equipment is in moving the New Yorker's household goods into storage or to another apartment. The average New Yorker is an uneasy individual, as a rule, occupying his apartment but a year, and before his lease expires (apartments are leased by the year), seeks new quarters. The rush occurs October 1, and moving concerns are in big demand. The motor van has met this demand, is tireless, and can be operated day and night.

A number of trucking concerns have experimented with motor trucks with success, and have found that not only is it possible to transport greater tonnage more quickly, but at a less cost per ton mile. One particular concern has ordered its third truck within the year, and the head of the company informed the writer that eventually he would replace all horse-drawn vehicles with trucks. Some concerns maintain one or two trucks with their horse-drawn equipment, utilizing the motor on long hauls and where time is a factor in the delivery. It is interesting to note that the number of light commercial cars used for light trucking is rapidly increasing.

Competition Forces Retailers to Adopt Trucks

Numerous retail business houses have found that to retain their patronage they must provide rapid transportation of merchandise to equal the service of their competitors. Deliveries must be made from the retail districts downtown to consumers in the up-town districts, and on the same day. While the department and other large stores have used the light delivery motor car for some time past, it is only within the past year that the small business concern has felt the press of competition in delivery and has adopted the automobile. These small machines are used both for long and short trips, and are used by the "butcher, the baker and the candlestick maker." It would be difficult, as previously stated, to name any trade or industry delivering the finished product that has not been converted to the efficiency of the automobile.

Commercial Cars a Big Advertising Asset

Not only are cars employed for commercial uses, but some are utilized for advertising. One concern has installed a moving picture equipment on a 1500-lb. capacity Studebaker car, and the machine is touring certain sections where trade is being developed. The power plant drives a dynamo generating a 110-volt current for supplying current to the picture machine, for in the territory covered it is not possible to utilize storage batteries owing to the lack of service stations. The concern has spent thousands of dollars in perfecting its equipment, and among the problems solved was that of projecting the pictures on a screen 6 ft. from the lens. Another was the right material for a screen that would permit of the reversing of the pictures—that is, so that the

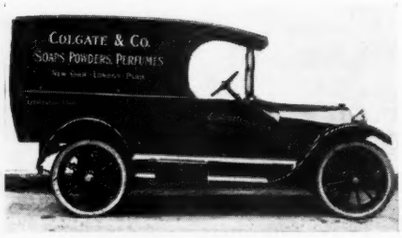
Distributes Bread With Four-Ton Trucks
The Great Atlantic & Pacific Tea Company employs a fleet of six four-ton Riker trucks for transporting bread to its numerous stores

Fleet of Garfords Used by H. C. Bohack Company, Brooklyn
This concern of grocers maintains twenty-seven branches in Brooklyn and New York, and finds the motor truck of great value

screen could be placed at the back of the body. (The picture machine is just back of the driver's seat.) To obtain its reels of film the company engaged the services of a company of moving picture artists.

Second-Hand Bottles Collected by Truck

Specific instances are cited of where the motor truck has revolutionized certain lines of business. Casey Bros., 541 West 46th Street, deals in second-hand bottles. Now the second-hand bottle business is quite an industry in Greater New York, and some idea of its magnitude may be obtained when it is considered that manufacturers of the popular soft drinks, etc., buy back the used containers. The work of transporting the empties from the freight terminals, etc., was formerly accomplished by horse-drawn equipments, but competition became keen when one concern found that with a motor truck he could eliminate the freights, etc., cover



A Type of Delivery Car Predominating on Fifth Avenue

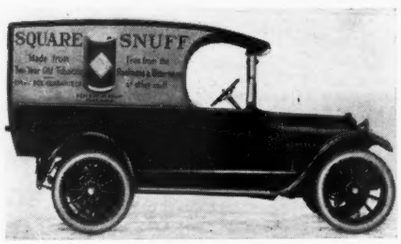
The motor vehicles utilized by retail stores on Fifth Avenue are noticeable for their simplicity in body lines and rich finish. The Colgate Company employs seventeen of these Reo fifteen hundred pound capacity cars.

greater territory, and greatly increase the number of bottles handled. As a result Casey Bros. was obliged to adopt the motor truck. The 2-ton Republic has enabled the concern to successfully compete with its rivals, is doing the work formerly requiring two 2-horse teams, and is making trips over new territory as well as covering sections of New Jersey.

Light-Weight Unit Serves All Trades

The Grand Rapids Furniture Co., Inc., 36 West 32nd Street, now utilizes motor transport, employing a ¾-ton Republic with a special furniture body. The truck not only hauls furniture from the freight terminals, but makes deliveries to the trade. At first this concern favored a 2-ton vehicle, but found that the smaller unit was best adapted to the work. Six months' use has resulted in the company contemplating the replacing of its horses with a fleet of six of these machines.

An example of the demand for rapid transportation is the Vim 1000-lb. capacity car in service with the Flower Co., Inc., engravers. This concern maintains two

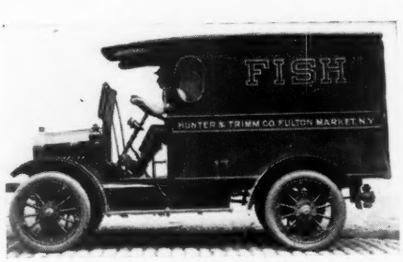


Studebaker Fifteen Hundred Pound Capacity Car Delivers Snuff

This machine covers double the territory of the horse-drawn equipment it replaced, and also serves to advertise the wares of the manufacturer.

stores and finds that the motor truck affords better service to its customers, and that a considerably greater radius is possible. Another Vim that has replaced the horse-drawn equipment is the car in service with Hunter & Trim, fish dealers at the Fulton Market.

The tendency to utilize lighter units is noticeable in the fleet of 16 Reo 1500-lb. capacity cars utilized by the government in Brooklyn. The specifications for this service called for 1-ton solid-tired vehicles, but the Reo efficiency engineer convinced the authorities at Washington that ¾-ton cars with 34 x 4½ in. pneumatic tires would afford better service, that less



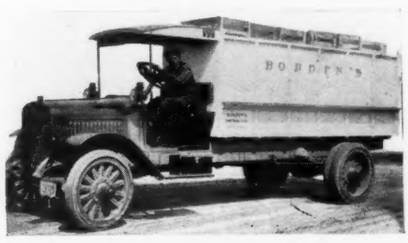
Fish Dealers Adopt Motor Transportation

Hunter & Trimm Company, of the Fulton Market, is one of the many concerns that have replaced the horse equipment for the more rapid and efficient vehicle. They use a Vim.

time would be lost and maintenance cost less. The first order for four of these machines has been followed with repeats of four inside of six months' service of the first fleet. These cars are employed in hauling to and from the trains and between post offices.

The recent epidemic of infantile paralysis demonstrated the utility of the motor ambulance, and because of the demand upon the hospitals every unit was worked to its maximum capacity. The service rendered could not have been equalled with horse-drawn equipment in New York City. During the recent street car, "L" and Subway strike, and when the cross-town lines were severely affected the public was served by the jitney bus, and many of these were 1500-lb. capacity chassis equipped with special bodies. Numerous cases could be cited to explain why the number of commercial cars in New York City has increased over 40 per cent. within the year.

The future holds great possibilities and the representatives of commercial cars of capacities of from 850-lb. to 5-ton are de-



Republic Truck Distributes Milk

Borden's Farm Products Division uses a three-ton Republic to supply depots in New York City from the Jersey City station.

cidedly optimistic. The dealers handling cars of 1000 lbs. capacity and under anticipate large sales in 1917, for the field of the light truck is just being developed. As one agent stated, "The surface isn't even scratched. Small business houses now realize that the light car has demonstrated its superiority over the horse-drawn equipment at any angle from which the situation may be viewed." The addition to the motor truck industry of new concerns which will build only a 1000-lb. capacity chassis or under, coupled with the fact that makers of larger units are investigating the possibilities of the light truck in large cities, indicates the opportunity afforded by the light car business. The light vehicle industry is bound to increase within the next 12 months, and desirable territory will be at a premium, particularly in Greater New York.

Government Adopts Fifteen Hundred Pound Capacity Cars

Part of a fleet of sixteen Reo trucks in service in the Post Office Department at Brooklyn. A feature is the use of pneumatic tires in place of solid, an experiment that has proven entirely successful

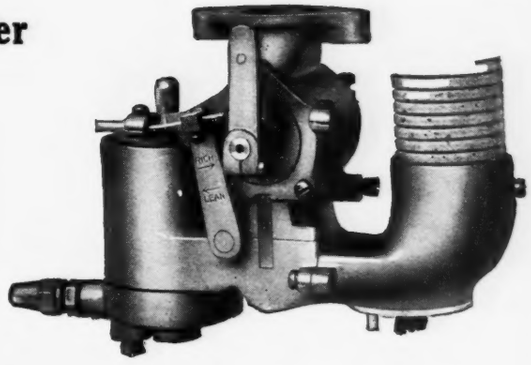
Everybody who is anybody in the truck industry reads the CCJ

"You doubtless know that the call for your carbureters on the Pacific Coast has been pronounced, and we are very glad indeed they are giving the satisfaction they are. In view of the low-grade fuel used in many sections of the coast, we know of no carbureter that would serve the requirements better than the Master, and we assure you it is a pleasure to speak well of it."
WICHITA FALLS MOTOR COMPANY, A. R. Grundelle.

Wichita Falls Model O, 3½-ton Truck, now using the Master Carbureter as standard equipment

Try It on *YOUR* Truck at Our Risk

The MASTER Carbureter



No matter what kind or size of truck you build, own or drive, you simply cannot afford to ignore the wonderful results obtained by hundreds of truck owners from the improved Master Carbureter. This carbureter is entirely different from any carbureter you have ever seen. Let us send you one for 30 days' free trial. Try it out under conditions of your own choosing. Put it to the severest tests—for economy, for flexibility and adaptability to all conditions of weather and temperature, for hill climbing, for rough roads, for quick starting with a cold motor. If the Master fails to deliver **more power** and **more mileage** on **less gasoline** than you have ever received from any other carbureter, return it to us at our expense. We offer the Master Carbureter on the basis of **demonstrated performance.**

The Only Carbureter that Requires

No Adjustments

Twenty-three of the foremost truck manufacturers now specify the Master Carbureter as standard equipment. Why? Because, by actual competitive tests on their own trucks, the Master gives **30% more power, 25 to 40% more mileage.** Let us send you the facts and figures. You will never realize the highest efficiency from your trucks until you have installed a Master Carbureter.

Choice of Leading Cities for Fire Dept. Apparatus

"Your carbureter is the one for this department. It is the nearest approach to being fool-proof of any I have ever seen. It is simply wonderful for quick starting, for surplus power and speed and for economy."—Daniel A. Sullivan, Automobile Instructor, Fire Dept. of the City of New York.

"I have tried out one of the Master Carbureters on one of our high-powered cars built here in our shops. The Master simply spells perfection when it comes to carbureters.

"My car will certainly be equipped with 'Master' and you can figure on an order for ten without further investigation."—A. L. Weeks, Chief Fire Department, City of Spokane, Wash.

"Last spring I installed a Master Carbureter on car used by me, and after giving it a thorough tryout, we equipped ten (10) pieces of fire apparatus with Master Carbureters, which are giving perfect satisfaction."—John F. Healy, Chief of Fire Department, Denver, Colo.

Steering-Post Control. It is never necessary to raise the hood for adjustments to any change in weather, altitude or road conditions. The steering post lever gives the driver, without leaving his seat, a graduated control over the air damper—a touch of the finger instantly modifies the mixture to any texture desired. The Master eliminates adjustments under the hood—costly "tinkering" by unskilled drivers.

At this time of year especially the Master demonstrates its supremacy for quick starting with a cold motor. Trouble-proof—so simple and durable in construction that it can't get out of order. Only three moving parts, and they are wearproof.

14 Jets Instead of 3. That's the secret of the extraordinary fuel economy. Instead of the ordinary fuel feed of 1 to 3 sprays, the Master has 14 to 21 sprays (according to size). Each spray delivers a gaseous mist, so thoroughly vaporized that the mixture gives perfect and powerful combustion. Even low-grade fuels are ground up to velvet-like smoothness, converting every particle of gas into power without carbonizing of the kerosene element.

For idling or slow running only one fuel jet is uncovered. As the Rotary Throttle revolves more jets are uncovered, **one by one**—as many as are required. Fuel consumption is economized with scientific accuracy.

Convince Yourself Mail this Coupon NOW

Tear off and mail this coupon for more information about the Master Carbureter, and free copy of valuable booklet, "Carburetion and Carbureters." With the rapidly increasing use of the Master Carbureter, every truck manufacturer, owner and driver will be obliged to decide for or against it. Why not make your decision now—if only to keep posted on developments among other truck makers and owners?

Master Carbureter Corporation
1212 West Fort St., Detroit, Michigan
Pacific Coast Branch
922-24 S. Los Angeles St., Los Angeles, Cal.

Master Carbureter Corporation,
1212 West Fort Street,
Detroit, Michigan,

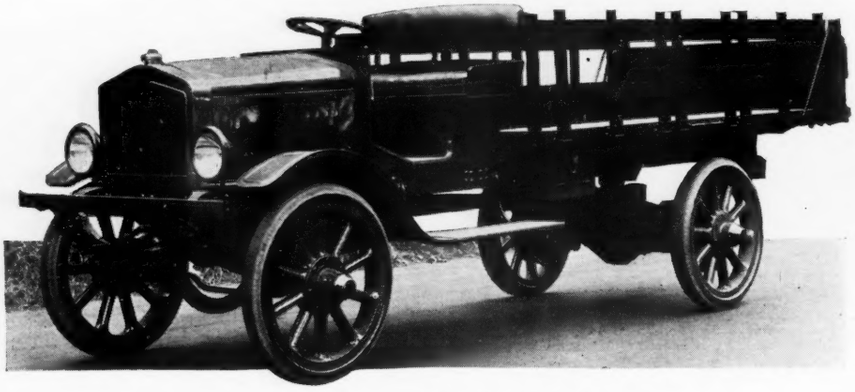
You may send me, without any obligation on my part, your catalog with free booklet — "Carburetion and Carbureters."

Name.....
Address.....
Town.....
State.....

The American Two-Ton Truck

By C. P. SHATTUCK

ONE of the latest entrants in the commercial car field is the American Motor Truck Co., with offices at 1328 Broadway, New York City, and factory at Hartford, Conn. The company is producing a 2-ton model, the design of A. D. Crossly, formerly chief engineer for the Pope-Hartford Co., who is designing a 1 and 3-ton chassis, also one of 1000 lbs. capacity. The 2-ton chassis is constructed to care for the stresses occasioned by overload and the S. A. E. rating of the horsepower, 36.15, is higher than the average 3-ton truck. An effort has been made to reduce replacement costs to the minimum by the use of bushings, etc. Electric lighting and engine starting are standard equipment. The standard body supplied is known as a utility in that it permits of loading or unloading from three sides.



The American Two-Ton Truck
Has Wisconsin engine, Borg & Beck clutch, Covert transmission, semi-elliptic springs, 132 or 144 in. wheelbase and 58½ in. tread

Power Plant

The engine employed is a type A Wisconsin, a four-cylinder T-head design with the cylinders cast in pairs. A three-point suspension is used. The bore is 4¾ in. and stroke 5½ in. The maximum speed of the vehicle is 18 m.p.h., controlled by a Pierce governor which is driven by a gear on the camshaft, thence by a flexible shaft to the governor proper which is located between the intake manifold and the carburetor. Cooling is by a centrifugal pump located on the left side of the power plant and directly connected by a coupling to a gear in the front case. The radiator is a Bush of the vertical type, of 24 qt. capacity, and is rigidly suspended, being attached to the front cross member by ½-in. studs and nuts. Option is given of the carburetor. Ignition is by a Bosch magneto-generator system located on the right of the power plant and directly connected by a coupling to a gear in the front case. Dual ignition is provided, a storage battery supplying the auxiliary current.

Clutch, Transmission and Rear Assembly

The clutch is a Borg & Beck, a double disc type with the gearset a separate unit, a Covert. It is of the selective type affording the conventional three forward speeds and a reverse. The gear ratios at an engine speed of 1000 r.p.m. are: High, 1:1; intermediate, 1.60:1; low, 3.30:1; reverse, 4.31:1. Drive is by a hollow steel shaft with two universal joints to a worm gear rear axle. The torque is taken care of by a yoked rod, the front end of which is secured to a bracket under the frame by a 1-in. bolt. The rear end is attached to a plate under the rear spring. The rear axle is a Sheldon worm drive having a ratio of 7.75:1.

The rear springs are semi-elliptic, 3 in. wide, 54 in. long, and the 1-in. shackle bolts are bushed in bronze at each end. These springs are shackled at each end to the outside of the frame. The front springs are semi-elliptic, 2½ in. wide, 42 in. long, and the shackle bolts are 1 in. bushed with bronze.

Front Axle

The front axle is a conventional I-beam section type of a high grade carbon steel with steel bushings in the yoke ends. The knuckles and steering arms are of a specially treated alloy steel and the arms are bushed. The clevis pins, pivot bolts and ball pins are hardened and ground. The tie rod is of steel tubing, and a ball-bearing thrust is employed between the knuckle and top yoke. The hub caps are of pressed steel bolted to the hub flanges. The steering gear is a Ross of the gear screw block and sleeve type. United States roller bearings are utilized in the front and rear wheels, which are the Smith hollow steel construction, and Hyatt bearings are employed in the gearset. The worm shaft has double ball thrust bearings. Both the service and emergency brakes are located on the rear wheels, both being of the internal type. The brake drums are 2¼ in. wide and 18 in. in diameter. The frame is 5¼ x ¼ in., a pressed channel type, 35 in. wide outside and 18 ft. long. Two lengths of wheelbase are afforded, 132 and 144 in., respectively. The tread is 58½ in.

The driver is located at the right, and the usual spark and throttle are mounted on a 22-in. steering wheel. The ignition and lighting switch are mounted on a plain type of dash, and control of the electric starter is by pedal or push switch at the side of the steering column. The storage battery is a Willard, 12 volt and 50 ampere hour capacity, located in a box suspended under the frame on the right side. Single, solid tires are to be used, the front being 36 x 5 in. and the rear 36 x 6 in. The equipment includes the usual jack, tools, oil cans, etc., and an electric horn placed under the hood. The chassis is listed at $2800 f.o.b. Hartford and comes with a priming coat. Bodies will be supplied to meet individual requirements.

THE PRODUCTION OF RUBBER TIRES IN THE UNITED STATES constitutes almost one-half of the total value of all kinds of rubber goods manufactured during the year. The Census Bureau has issued a statement of statistics showing that the value of tires is nearly 49 per cent. of the total. The Goodyear Tire & Rubber Co., Akron, Ohio, uses 10 per cent. of the total world's production of crude rubber.

WE ARE INFORMED BY THE FULTON MOTORS CO., builders of the Presto-Car at Fulton, Ill., that one, by the name of Harold J. Lambert, has never been an officer of the Fulton Motor Truck Co. or connected with that company in any manner except as a draftsman for a few weeks. The company states that this note is desirable in view of the fact that there seems to be some rumor afloat that he was at one time an officer of their organization.

Plenty of the right kind of circulation means quantity results to advertisers in the CCJ

SMITH WHEELS "EVERLASTING"

Tire Mileage Increased—Gasoline Mileage Increased—Truck Life Increased!

Trucks Equipped With Smith Wheels

To date Smith Wheels are supplied with the following Trucks and the list is constantly increasing:

American	Hall	Moreland
Chase	Hurlburt	Packard
Cunningham	Indiana	Riker
Federal	Kelly-Springfield	Selden
Garford	Kissel	Service
Gramm-Bernstein	Knox	Signal
G. M. C.		Sterling

Smith Wheels Guaranteed during LIFE OF TRUCK on which originally placed.

SMITH WHEELS MAKE TRUCKS MORE SALEABLE

Made for trucks of any size and to fit any axle.

We will prosecute any manufacturer of a wheel of hollow spoke design, or of a type having a felloe with internal braces, for infringement of our Patent Rights.

SMITH WHEEL INC. SYRACUSE, N.Y. U.S.A.

When Writing, Please Say—"Saw Your Ad. in the CCJ"

The Hurlburt Line of Trucks

THE Hurlburt Motor Truck Co., of New York City, has just announced that plans have been made to increase their yearly output. These plans include the distribution of Hurlburt Trucks throughout the United States as well as a number of foreign countries. The factory is located at 133rd St. and Harlem River, and consists of eleven buildings with ample facilities for testing and housing the trucks. The company manufactures the following size vehicles: 1½, 2, 3½, 5 and 7 ton.

One and a Half Ton Model

The 1½-ton truck is made in two wheelbases, 136 in. and 148 in. It has a four-cylinder engine, 3¾ in. bore by 5½ in. stroke, developing 25 h. p. The speed is regulated to 18 miles per hour, with a centrifugal governor. The frame is channel section, heat-treated pressed steel, guaranteed for the life of the truck. Rear axle is of the standard Hurlburt type and is equipped with four brakes. The power plant is multiple disc with a heavy, full selective three-speed transmission. It is equipped with single, solid tires on all four wheels, 34 in. x 4 in. front, and 34 in. x 5 in. rear. Standard equipment includes electric side and rear lights, generator, battery and complete set of tools.

Two-Ton Model

This model is made in two wheelbases—148 in. and 170 in. It has a four-cylinder engine, 4⅛ in. bore x 5½ in. stroke, and develops 30 h. p. The speed is regulated to 16 m.p.h., with a centrifugal governor. Rear axle is the standard Hurlburt type, and is equipped with three brakes, one acting on the propeller shaft. The rear end is equipped with extra long springs, radius and truss rods. It is equipped with single, solid tires in front, 36 in. x 4 in., and dual, solid tires in the rear, 36 in. x 4 in.

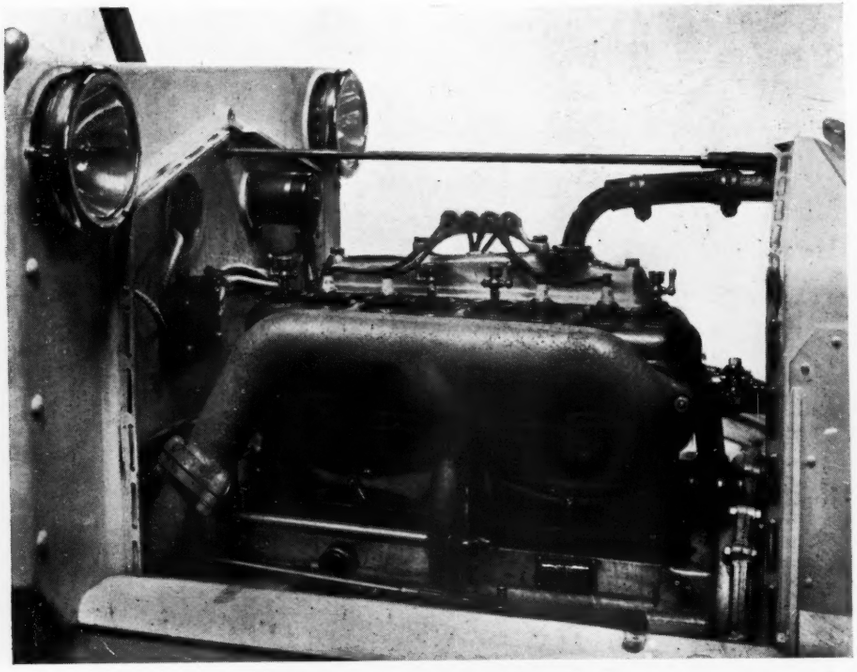
Three and a Half Ton Model

The 3½-ton truck is made in two wheelbases, 146 in. and 170 in. It has a four-cylinder engine, 4¼ in. bore x 5½ in. stroke, and develops 38 h. p. The speed is regulated at 13 m.p.h., with a centrifugal governor. There are three brakes. Gear transmission is full, selective, three speeds. The radiator is the tubular type, with centrifugal pump. Tires are 36 in. x 5 in. single, solid in front, and 36 in. x 5 in. dual, solid, in the rear.

Five-Ton Model

The 5-ton truck is made in two wheelbases, 156 in. and 170 in. It has a six-cylinder engine, 3¾ in. bore x 5½ in. stroke, and develops 48 h.p. There are four brakes on this truck with three-speed transmission, full selective sliding gears. The tires are 36 in. x 5 in. single, solid in front, and 36 in. x 6 in. dual, solid in the rear. The 7-ton model has similar specifications with a few exceptions.

Two-Ton Hurlburt Truck
Eighty per cent of the load is carried on the rear wheels, therefore the rear structure is equipped with long springs, radius and truss rods, to sustain the full load



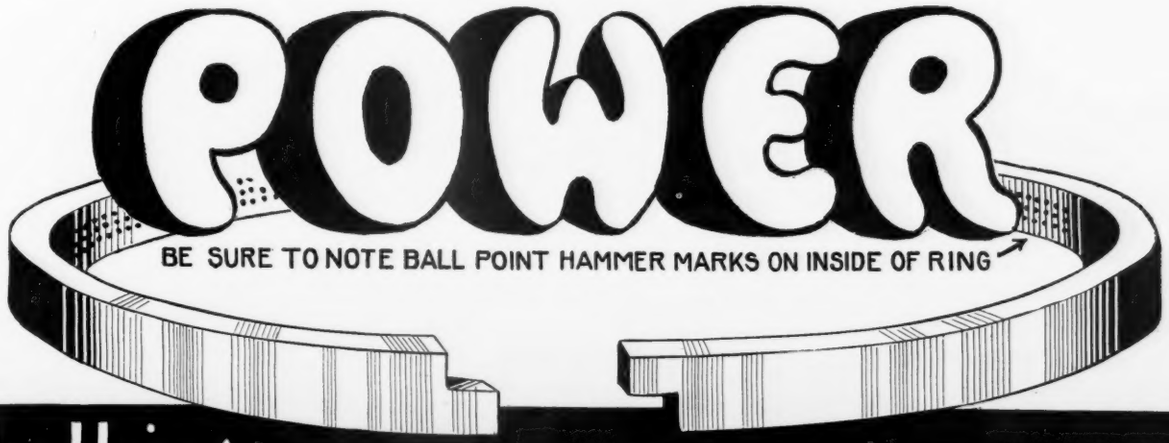
Engine of Two-Ton Hurlburt
This engine has a 4⅛ in. bore, 5½ in. stroke, and is rated at 30 h.p.

Special Features

There are two peculiarities of the Hurlburt Trucks. One is the load distribution and the other is the rear axle construction. While it is not at all uncommon for a very considerable portion of the load weight to be carried on the rear axle, the Hurlburt Truck goes about as far as possible in this respect and the rear axle carries not less than 80 per cent. of the load. The rear structure is given all the strength required for the full load, while the front, never carrying much, is mounted on comparatively light springs which protect the power plant, and incidentally make life easier for the driver.

The Hurlburt rear axle construction affords great strength and at this point strength is necessary because of the stress imposed by the load distribution. The rear axle housing is a hollow steel casting that is continuous from end to end; the hollow steel spindles for the wheel bearings are inserted in the ends and extend inward almost to the center, the inner ends being supported by webs cast integral with the housing. The worm drive is of the Hindley type and the worm proper is rigidly and accurately supported in ball-bearings bolted to the solid housing. There is a large opening at the rear of the axle and a smaller one at the front side, for the introduction of the gearing, but none at the top or bottom.

Merit wins—that's why the CCJ is the leader



By Using American Hammered Piston Rings

The greatest Power-Conserving and Power-Generating Piston Rings made today are these **American Hammered Piston Rings.**

That is why **American Hammered Piston Rings** have been adopted exclusively by such noted manufacturers as *Pierce-Arrow, Chalmers, Winton, Mercer, Stearns, Lozier, International, White and Kelly-Springfield.*

American Hammered Piston Rings can be installed in any Truck or Pleasure car—no matter what style motor you have—and they will pay for themselves quickly in the saving of gasoline and oil alone.

American Hammered Piston Rings are guaranteed to increase the motor power of any truck or car 10 to 30 per cent.

They are guaranteed to increase the mileage from gasoline by 25 to 50%.

They are guaranteed to reduce oil consumption by 50 to 75%.

They are guaranteed to prevent spark-plug trouble, carbon trouble and smoking.

They are guaranteed to keep the cylinders from getting out of true.

This Is Our Guarantee

We guarantee all the results here specified, and if the purchaser is not altogether satisfied any time within one year after installing a set of our rings, he has the privilege of returning the rings and we will refund his money.

All that we claim for **American Piston Rings** has been proved by practical tests. That is why we say these rings are a **necessity, not a luxury.**

We Want Dealers and Agents

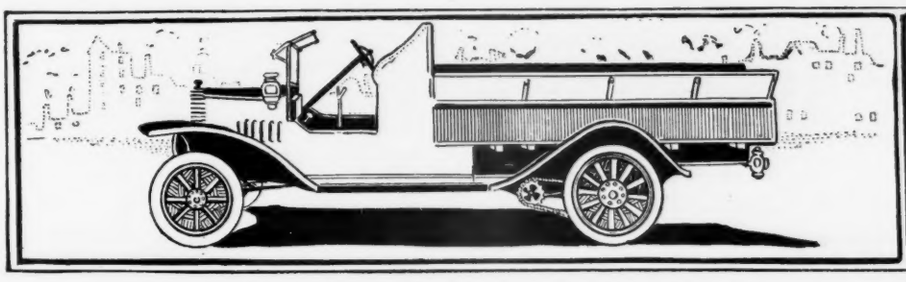
Exclusive territory will be allotted to enterprising men. **American Hammered Piston Rings** are easy to sell, *because their reputation* is already established.

All inquiries received at our factory as the result of our National advertising will be turned over to our representatives. We co-operate with our dealers and agents by furnishing them with business-pulling advertising matter. We give them all the aid we possibly can and help them to establish a substantial and well paying business.

American Hammered Piston Rings for Ford cars have made a great hit everywhere. If you are interested in our proposition, write us and we will give you full particulars.

On request we will mail you our interesting and instructive booklet, "The Soul of the Motor"

American Piston Ring Co. Dept. C Newark, N. J.



The New Pennsy One Thousand Pound Delivery Truck, $750

WITH the introduction to the light delivery truck business of the Pennsy ½-ton quick service motor wagons by the new Pennsy Motors Co., of Pittsburgh, the American market is invaded by a truck that promises to offer lively competition to other trucks of this type now in the field.

The Pennsy light delivery trucks, selling at $750, come in all styles of bodies, centering principally around the open express with driver's top; the four-poster with side curtains, and the closed panel body styles. Like the Pennsy pleasure car, these durable and economical light delivery Pennsy trucks have been designed by the chief engineer of the Pennsy Co., Edward T. Birdsall, formerly of New York and Detroit, well known to the automobile world.

The capacity of the new Pennsy trucks is 1000 lbs. normal; 25 h.p. The wheelbase is 98 in., permitting quick handling and short turns, readily adaptable to delivery service among city streets. The tires of the front wheels are 30 x 3½ in., with 31 x 4 in. non-skid on the rear. Goodyear quick demountable tires are used.

Unit Power Plant

Engine, clutch and transmission, with accessories, are joined to form a unit power plant, which is given three-point suspension in the frame. The clutch is a dry plate multiple disc type and the transmission is selective type, giving three speeds forward and one reverse. The universal joints have large wearing surfaces and hold lubricant for one year.

The engine is of the latest four-cylinder type, "L-head" block casting, with removable head, facilitating valve grinding and carbon removal. Force feed and splash oiling system. The bore is 3⅛ in. with a 4½ in. stroke. Spark plugs used are S. A. E. standard. The engine is rated at 15.62 h.p. and develops a maximum of 29 h.p. Cooling is by thermo syphon system, using large radiator. Ignition by high tension magneto, and the carburetor is automatic type.

Bodies

The bodies of Pennsy trucks, in addition to a full panel, doors or gate, open express with standing top, or open express, may be had specially designed, built to order. The loading space of the standard body calls for dimensions of 44 x 66 x 54 in. high, or 90 cu. ft. Parcel post or bodies to comply with the U. S. P. O. regulations can be fitted. All standard colors, except white, are optional. Lettering and decorating extra. The bodies are supported on sturdy semi-elliptic springs, 32 in. front, 41 in. rear.

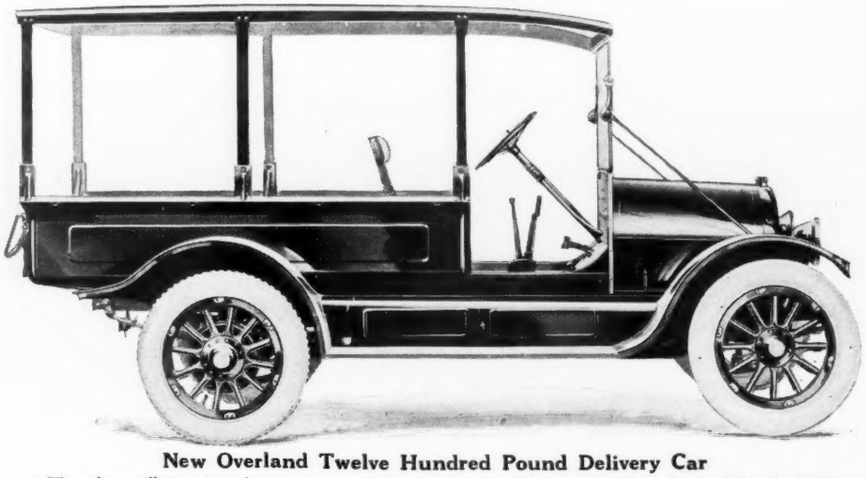
An unusually strong pressed steel frame, with the bumper built in on the frame itself, is a noteworthy feature of the construction of these Pennsy trucks. The steering gear is the worm and worm wheel pattern, extra heavy.

Axles

Front axles are the I-beam section forging construction; rear, floating type. Bevel gear drive. Brakes, extra large; equalized. The wheels are of the demountable Q. D. type, with extra rims, each wheel being built of twelve 1½ in. hickory spokes. Pennsy trucks have left-side steering, center control, fixed spark; foot accelerator, oil indicator on dash; fuel tank under seat.

The weight of the entire truck with panel body is 1950 lbs.

Standard equipment calls for windshield, horn, bumper, extra rim, tire irons, tools, jack, three lamps, tire pump and tire repair kit.



New Overland Twelve Hundred Pound Delivery Car

The above illustration shows a new entry among the delivery cars, manufactured by the Willys-Overland Company, at Toledo, Ohio. This new model is a completely equipped motor vehicle, retailing at $775. The spacious body, containing 120 cu. ft., is constructed of pressed steel, with a hardwood floor. It has a capacity of twelve hundred pounds and two passengers. Electric starting and lighting, four-cylinder en bloc engine developing 35 h. p., and 4½ in. tires are among the leading features incorporated in this car.

Pennsy One Thousand Pound Light Delivery Truck

Offered with open express, top express or full-panel body, $750

WILLYS-OVERLAND, INC., has opened new and completely equipped retail salesrooms at Broadway & 50th St., New York City. This provides facilities for showing the entire line, and is three stories high, with a frontage of 100 ft. on Broadway, and 103 ft. on 50th St. The main floor is to be used for display purposes; the retail sales offices are on the mezzanine balcony, between the first and second floors; the second floor will be used for used and commercial cars, and the third floor will be devoted to the sales of automobile accessories, motorists' apparel, supplies, rugs, etc.

The CCJ is built upon the lasting foundation of honest circulation

Economies Effected in Delivering Dry Goods

Delivery Expenses Are Looked Upon by the Average Merchant as a Necessary Evil. The Wurzburg Dry Goods Company, of Grand Rapids, Mich., Penetrated the Surface Aspects of Service, Revealing the Essentials

By C. W. SHAFER

IN discarding horses and installing light trucks for delivery purposes, the Wurzburg Dry Goods Co., a concern doing a large annual business at Grand Rapids, Mich., has kept a complete record of performances for the purpose of comparison which are interestingly convincing. Using as a basis for computation the expenditures for three years it has been found that the trucks are far less expensive in operation and far more efficient in service. Actual figures show that on each month during the period considered, a representative saving of $47 was registered. This figure is arrived at through the following table:

Trucks (Cost per Month)

Driver (salary)	$60 to $70
Depreciation	20
Insurance	5
Storage	5
Oil	2
Gasoline	15
Tires	20
Parts	10
Repairman	10
Totals	$157

Horses (Cost per Month)

Driver	$60 to $70
Feed	18
Shoeing	2
Repairs (harness, wagons, etc.)	3
Depreciation	2
Stable	5
Insurance, etc.	2
Totals	$102

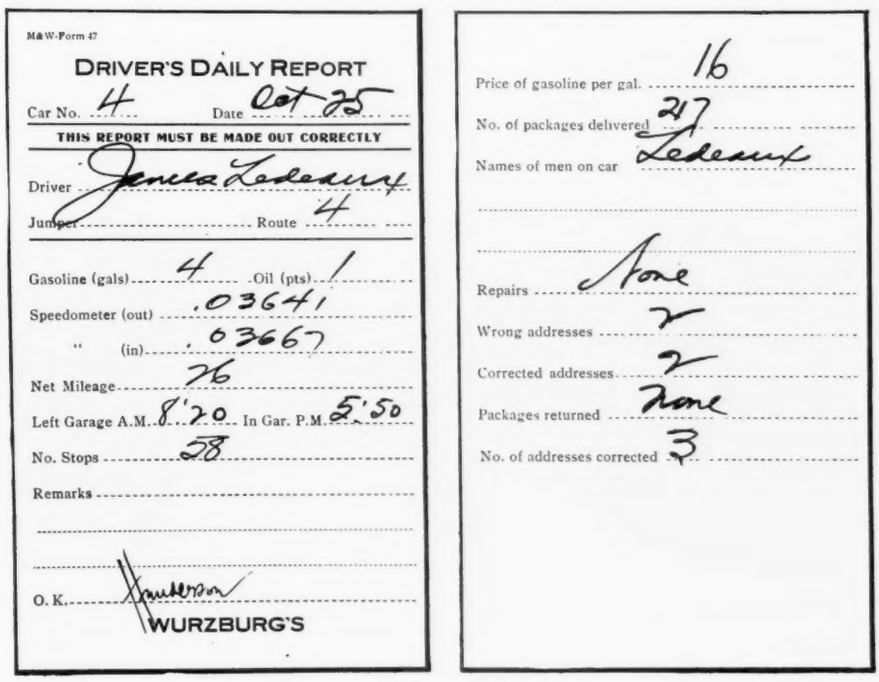
Figuring that the average truck will cover at least 40 miles a day and that it would require two horses, at least, to cover the same territory, the expenses of the one horse must be doubled. Consequently the saving is found by subtracting $157 from $204, or $47. In many instances the services of three horses would be necessary and if this were the case the difference would be $149 in favor of the truck.

The above figures are adduced from records which have been tabulated with considerable regard for accuracy and with a view toward being liberal with each factor. The salaries of the drivers in each case are the same because both are hired as experts. Depreciation, costs of tires, upkeep, costs of oils, gasoline and feed have all been computed on a liberal basis. With the trucks, at the present time, from 600 to 1500 packages are distributed daily, the six trucks being in operation. (This is done at an average cost of 6 to 8 cents per package. This average may be lessened considerably and the number of deliveries increased after the first of the year when two more trucks, which have been ordered, will be placed in service).

Under the horse regime fewer packages were delivered with more equipment and the cost per package was consequently higher. Special deliveries are now cared for with great facility that formerly were beyond possibility. The necessity for maintaining a large barn with the attendant unsanitary conditions has been done away with and a small garage, neatly maintained, suffices for all storage demands. More territory is covered every day with greater satisfaction both to the company and to the patron. In every detail, with the possible exception of instances when trucks become stalled in some bad road way, the light cars are far superior to horses, the Wurzburg Co. knows. Horses seldom find an unnegotiable spot in the road while a truck may be susceptible. When this condition arises a regularly maintained service car quickly eradicates the difficulty, and the single argument against the motor is obliterated.

One of the Wurzburg Trucks

A rigid system of inspection serves to keep the trucks in good condition and demonstrates the value of careful attention to detail.



M&W-Form 47

DRIVER'S DAILY REPORT

Car No. 4 Date Oct 25

THIS REPORT MUST BE MADE OUT CORRECTLY

Driver Jessie Ledeaux

Jumper Route 4

Gasoline (gals) 4 Oil (pts) 1

Speedometer (out) .03641

" (in) .03667

Net Mileage 76

Left Garage A.M. 8:20 In Gar. P.M. 5:50

No. Stops 58

Remarks

O. K. Hamilton

WURZBURG'S

Price of gasoline per gal. 16

No. of packages delivered 217

Names of men on car Ledeaux

Repairs None

Wrong addresses 2

Corrected addresses 2

Packages returned None

No. of addresses corrected 3

Driver's Cards

Daily reports are made out on these cards, indicating the performance of the truck and the movements of the driver

The Driver Problem

With the adoption of trucks for delivery purposes the Wurzburg Co. has worked out a number of problems in a different and highly valuable manner. At the outset the driver problem was the most baffling. It was practically impossible to secure good, conscientious drivers and those employed established the life of a truck at a little more than one year. Careless work on the road and shiftless care of the truck when not in service called for innumerable part purchases and ran the bills for repairs up from $25 to $75 a month. It was evident, after a year, that some radical steps had to be taken to insure efficiency. Now, under the supervision of Superintendent George B. Bluteau, the drivers work under a regular set of rules posted in conspicuous places in their cars and in the garage. The rules demand nothing but that which is in reason yet they are held absolute under all conditions.

Every driver must inspect his car each morning before starting on a run and his inspection must be reported in detail to the garage foreman. He must wash his car daily, see that all parts are oiled and tighten all loose bolts and nuts. He must

Make your product pay—advertise in the CCJ

exercise all vigilance possible in detecting trouble and, with his foreman, must make all repairs. If he fails in any of these requirements he is immediately dismissed from service. At the same time, if he fails to catch an obvious piece of trouble which later may cause a breakdown and thus come to the attention of the foreman, his dismissal is certain. A supernumerary driver is always held in reserve, doing work in the wrapping room or some other department, and in case of a dismissal he is immediately pressed into the breach to avoid any possible impairment to the service.

With this system of absolute inspection a high standard of efficiency has been achieved and the life of the trucks has been lengthened materially. Repair bills are held down to a point ridiculously lower than previously, tire cost is less, parts bills are fewer and, in every way, the cost of operation is decreased. It is only with this system the Wurzburg Co. believes that the greatest worth can be secured from cars.

Checks on the men are made by the superintendent, foreman and others who, when an opportunity presents itself during the day, take their own machines and follow the drivers. In this way any imperfection in service is discovered and many of the drivers, caught "loafing on the job," have found their dismissal awaiting them on the return from the trip. It has been found, by actual figures, that one man in every ten is the man wanted. During one period of 6 months drivers were changed 40 times. Eventually, however, the system had its effect and good, substantial men were secured. As a reward for these men the company has advanced the wage standard over 50 per cent. and it will continue to raise as long as the men remain steady, faithful and reliable. The idea of the company is to make the positions worth while so that the men, in remaining and growing more efficient daily, will be remunerated for their pains and will, consequently, be of greater value to the company.

The Card System

In connection with this plan every driver is equipped to make a report each night of his daily workings. Cards are made out which show the consumption of gasoline, speedometer readings, time of operation, number of stops, number of packages delivered, repairs made and other details of the day's work. These cards are turned in to the foreman who O. K.'s them. Before doing so, however, he makes out his daily delivery report on which he makes a total of all units of the cards. He then sends the cards and his report on to the superintendent. The superintendent, in turn, sends them on to the managerial department. In this fashion an absolute check is kept on each day's results and the management can, at any time, ascertain just how the car and the men are performing. If the cards show a deficiency in any feature it is immediately sensed and an investigation follows. In this way the efficiency of the service is furthered. In conjunction with the card feature a requisition plan is maintained which makes it impossible for any driver to profit by an extra tire or spark plug. The requisitions are filled out by the driver after he makes his morning's inspection. These must be scanned by the foreman and by the superintendent and honored before the parts may be acquired. Under the O. K. of the two officials the purchase is made by the driver. Later the requisitions are turned in and checked up by the managers, who, not infrequently, make personal inspections to check back over the entire route that the requisition has travelled.

As the requisitions are received an order blank is made out and together with a repair slip are sent by the driver to the repairman. He keeps track of all services performed and makes notations on the slip which is later returned, with the requisition attached, to the superintendent for his O. K. This serves as an added check on the department and circumvents all possibility of loss.

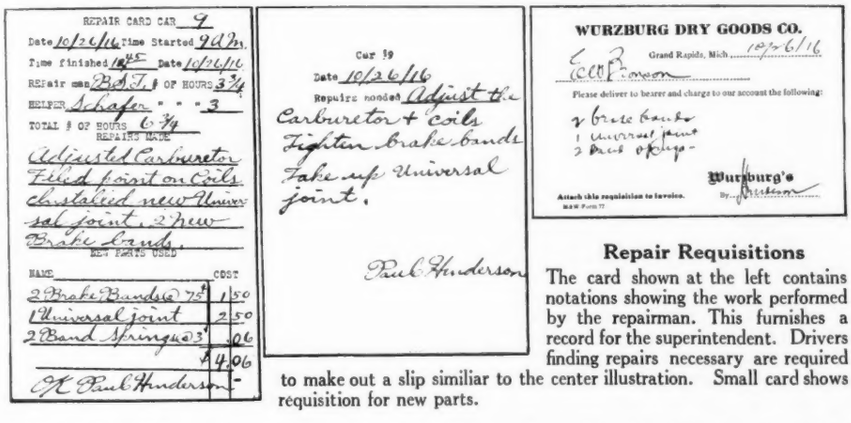
With Regard to Incentive

The foregoing paragraphs have been devoted entirely to the mercenary side of the efficiency question in the Wurzburg delivery service. Now comes the side which shows how the driver is favored to a profit although, at the same time, he in increasing the self-same efficiency. Several weeks ago a card was posted announcing a friendly contest in which prizes of $5, $3 and $1, respectively, would be given for first, second and third places. The object of the contest was to secure the greatest number of miles per gallon of gasoline. It worked out nicely and at the end of the week the prizes were awarded much to the gratification of the winners. It was reported then that another contest would follow, but the first of the week showed no notice on the boards. At the end of the week, however, three drivers were called out and given prizes. They looked astonished and showered questions. The information came that they had brought back the fewest packages of any of the drivers. Jubilant, they returned and told of their good fortune. Then it dawned upon the entire force that a contest would be staged each week, the object remaining a secret until the week had been finished. It was evident that every man had to work his best in every detail in order to be considered when the prizes were awarded. The idea had a telling effect and the next week the results were little short of remarkable. Low mileages were turned in and scarcely a package was brought back to the store, but that time the prizes were given to the drivers who had kept their cars the neatest. The next week the contest was on the neatness in the driver's personal appearance. And thus they will continue, different every week, but at no time known to the contestants. Already this plan has had a remarkable effect and it has done as much toward raising the standard of efficiency as any other feature. It is considered to be practically as valuable as the daily inspection.

Laying Out Routes

Another feature of the Wurzburg system is an "education map idea." The city is divided into four districts and each district is scheduled for a delivery at 8 A. M., 12 M. and 3.30 P. M. Beside the order boxes a large map of the city, with its districts, is hung and in each car, at the right of the driver's seat, a small reproduction of the same map is placed. These maps show clearly every street, alley and intersection. It is required that each driver shall study the big map for at least five minutes each morning until he has reached a point of knowledge which will admit of his answering any question put to him by his foreman as to the most expeditious route to a certain point. Quizzes are held frequently and various points are suggested for the driver's explanation. In this way he becomes thoroughly conversant with his territory and is often able to cut off considerable distance on a trip by taking a short cut. The idea not only saves a great deal of time but it enhances rapid delivery on rush calls and it means a great deal at the end of each week in the saving on gasoline bills. For the new drivers the maps in the cars are followed easily and they insure good results on all trips.

With the regularly maintained repair man the system of driver's inspection, the contest plan and the "map idea," the Wurzburg Co. has practically solved the light delivery problem. And, inasmuch as the value of the trucks over horse-drawn vehicles has been established in figures beyond the peradventure of a doubt, the officials of the company believe that their truck operations will always continue and will always be a source of profit hitherto untouched.


REPAIR CARD CAR 9
Date 10/26/16 Time Started 9 A.M.
Time finished 12 PM Date 10/26/16
Repair man B. J. # OF HOURS 3 3/4
HELPER Schafer " " " 3
TOTAL # OF HOURS 6 3/4
REPAIRS MADE
Adjusted Carburetor
Filed point on Coils
Installed new Universal joint. 2 new Brake bands.
NEW PARTS USED

NAME	COST
2 Brake Bands	75 1.50
1 Universal joint	2.50
2 Band Springs	03 .06
	4.06

K Paul Henderson

Car 19
Date 10/26/16
Repairs needed Adjust the Carburetor + coils Tighten brake bands Take up Universal joint.
Paul Henderson

WURZBURG DRY GOODS CO.
Grand Rapids, Mich. 10/26/16
C. C. Bowman
Please deliver to bearer and charge to our account the following:
2 brake bands
1 universal joint
2 Bxs of Springs
Wurzburg's
By Henderson
Attach this requisition to invoice.
M.&W. Form 77

Repair Requisitions

The card shown at the left contains notations showing the work performed by the repairman. This furnishes a record for the superintendent. Drivers finding repairs necessary are required to make out a slip similiar to the center illustration. Small card shows requisition for new parts.

The Evil of Price-Cutting

By GEORGE W. GRUPP

AS the COMMERCIAL CAR JOURNAL representative was rambling about to the various New York motor truck dealers' offices he was dazed for a minute by the remarks which John Allen, New York manager of the Service truck, made. It was not that the writer was ignorant of this deplorable condition, but he was dazed by the way this dealer expressed himself. And yet what Mr. Allen said is not only true of some of the some dealers in other cities.

"If you want to sell a truck at list price, from the present appearances of things," began Mr. Allen, "it should have a solid gold chassis with diamond rivets.

"From the very first moment that a truck is sold at a cut price, have we any right to expect a purchaser to have any confidence in the salesman or the product? How can we presume to put forward the divine gift of sincerity when we have done the very thing that has destroyed sincerity and honesty? How in other words can we expect a purchaser to have confidence in us when he is convinced that we have stolen money from another purchaser by charging him a higher price? The word 'stolen' might sound a bit harsh, but it is the name for it. To charge one man more than another, you have robbed the man who paid the higher price. These are the methods which we despise in the Baxter Street clothing merchant, but we elevate them, or at least try to, to the position of dignity in the motor truck industry.

"The very minute a price is cut there is every reason to suspect that the product is weak. If we want to cut down our profit, why not do so by making the product better, and thereby bring the industry up to a point where the people will respect it.

"Heroic treatment is needed in the motor truck industry, otherwise it will always be called a 'game,' as it will deserve to be called. There has never been a time in the history of American Industries, when so much promise was offered to any product as that which is now being offered to the motor truck manufacturers. And yet there are those who would trail it through the mire of dishonest practice, and by so doing not only lose their own opportunities, but also spoil those of honest well-meaning people. There is just one grain of comfort: such practices have never succeeded. They may seem to succeed for a time, but the fellows who are cutting prices now, will be talked about as Poor Old Smith, who use to do so and so. Poor Old Smith has given some of his best years toward the making of mistakes."

He concluded his remarks by saying: "The sooner the cut price dealer wakes up and gets into the motor truck industry and deserts the motor truck game the better."

An Industry Destroyer

This painful condition which Mr. Allen has so pointedly described is no delusion. This practice is undermining and destroying the very foundations of the industry, and if it is not checked it will bring this growing industry down with a terrific crash. This practice among some dealers that "I will get what I can," and "I don't know what I will get" is the most flimsy foundation upon which any business can stand.

All of this might sound radical, but nevertheless if the motor truck dealers wish to get the price to which they are justly entitled and place their truck on a one price standard commodity basis, then they must rigidly enforce the principles of absolute frankness and unqualified uniformity of prices in their dealings with customers.

The Effect on the Public

Each time a prospect buys a truck at a cut price he is being misled and deceived. Why? Because some time that particular dealer is going to make it up if he can. And the place he is most likely to do it in is in the service and parts department. Further, if a dealer once starts this practice he will establish for himself a reputation. The buyer on whose truck he did not make any discount, when he learns that others have received a discount, will wish that dealer in a hell of fire and brimstone. And finally the dealer will no longer be in a position to demand the list price because buyers will have come to believe that the cut price is the real list price. And if all of the dealers of a certain make adhered to such corrupt practices their factory will of necessity be compelled to make an inferior product in order to insure a living wage for the dealer. By doing business on a strictly one-price basis gives the people confidence in the truck produced, because they then know that they cannot get it any cheaper anywhere else. And incidentally they know that they are not being robbed. But as conditions are today, they usually go to the dealer who offers the biggest cut in his price. Each time a truck is sold below list price the buyer loses real confidence in the manufacturer because in his own mind he is trying to figure out "how much was I robbed on my previous purchase?"

The Price Paid for Cutting Prices

The people should be educated up to the fact that each time they cater to the "cut-price dealer" they are not only aiding that particular dealer to commit commercial suicide, but they are actually helping to drive the manufacturer whom this dealer represents out of business. The dealer gains nothing by such practice, and in return he destroys his own honest reputation and the markets of the manufacturer. The buyer and manufacturer who tolerate the continuing of such practices is inviting monopoly. And then who pays? Why, the public, of course. A motor truck monopoly would fix the price hard and fast and they would boost the price to suit their particular fancies. And then who pays ultimately? Not only does the prospective buyer, but also Mr. Cut Price. This corporation will not trust Mr. Cut Price with a real responsible position. For their particular needs he would be a better door man, and besides they could not afford to have him act as their representative because everybody who came to him would expect a discount.

The Present Effect it is Having on the Manufacturers

Every time a dealer offers his manufacturer's truck below list price, which the manufacturer has advertised so extensively and expensively, he is robbing him of his good name. A manufacturer who has created for himself a national reputation by his honesty, efficiency and advertising is very much injured by cut prices. In fact, he should be the sole determiner as to what retail price the truck should be sold. Why? Because in the past dealers were held largely responsible for the goods they sold, but this idea is fading today. Now the manufacturer is looked upon as the responsible one. And this responsibility does not terminate immediately after an exchange of money for a truck. On the contrary, it exists for a long time afterward. Therefore, if the manufacturer's reputation is not to be tarnished in any way, because of this close relationship, and if he does not wish to lose the public's confidence, then he must insist that his dealers are fair and sell their truck on a one-price basis.

How to Break Down Price-Cutting Practice

Then, again, one often hears another say that the prohibition of "unfair competition" or "price cutting" is not a violation of free competition. Such a conclusion is utter tommy rot, the dream of a warped imagination. The manufacturers can aid in exploding this bubble. In the first place, all dealers should be placed on an equal footing, if they are not already so, so that all of them can buy at the same wholesale price from their particular manufacturer. The manufacturers should adjust their list prices so that they will yield a fair profit to themselves and to dealer and yet be sufficiently low so as to induce the public to buy. It might be well that the manufacturers only consign the trucks rather than sell them outright to the agent. Preferential discounts should be given to those who maintain the list price and it should be withheld from those who depart from the price list. Private detective services should be established, whose business it should be to detect and unearth any price cutting. By employing methods such as these and rigidly enforcing them price cutting may be eliminated. But in enacting an anti-price cutting law in this country, by either Congress or the various State Legislatures, the legislators should imbed in the law the privilege of making it possible for the manufacturer to refuse to do business with a price cutter.

Why is the CCJ the only truck paper a member of the Audit Bureau of Circulations? Here's food for thought

The Ideal Truck—Must Suit the Driver and Repairman

By LEN G. SHAW

"WHAT is the ideal truck?" I asked J. C. Ayers, of the Towar-Ayers Co., motor truck distributors of Detroit, Mich.

I felt I had ample justification for propounding this blunt inquiry. Mr. Ayers' apprenticeship in merchandising trucks dates back to the time when a two-cylinder opposed engine with chains that sometimes drove and sometimes didn't was the best bet in the way of motor vehicles. And he has since that day been steadily identified with some of the biggest truck makers.

"There ain't no such thing," was the rejoinder, as Mr. Ayers dropped into the vernacular to give expression to his views. Then, in a measure qualifying his sweeping statement, he continued:

"You see, the ideal truck, like Caesar's wife, must be above suspicion. We have only history to affirm that J. Caesar's helpmeet was absolutely perfect. But the repair shops today are filled with concrete proof that the ideal truck has not yet arrived—although it is almost here.

"You'd have a hard time making a lot of truck owners believe this, just as there is difficulty in showing them where it is the fault of the driver or the conditions under which he is forced to work rather than a fundamental defect in the truck that causes it to buck.

"Nevertheless, it is a fact that the last couple of years has brought a development and a refinement of motor trucks that places the approximately perfect machine well within the range of possibilities. There are trucks today that are 90 per cent. efficient—perhaps a little more—and that is getting pretty close to perfection compared with what was once the case.

"Several things have united to bring this condition about. Experience has taught engineers much. A lot of the problems that once baffled have been ironed out.

"Quantity production, with its accompanying tendency to concentrate on one model, has helped.

"But perhaps the greatest aid has been the assembled truck. I am speaking now of the trade in general, with no reference to certain manufacturers who have specialized in their own plants until they produce a high article.

"That statement of mine may sound funny, particularly when you recall that a few years ago the 'assembled' job was viewed with suspicion that often was warranted. Parts were picked up wherever they could be obtained, put together in a sort of haphazard way, and the result was a hybrid that was bound to cause trouble.

"A maker would have a hard time doing that now even if he wanted to. When it comes to ordering engines the company making them insists upon seeing the plans of the truck. Then its best engineers advise in regard to the engine requirements. If you disagreed with them without being able to prove your point you'd get no engines—from some concerns at least.

"The same rule applies to axles, to frames, springs and other parts. Why? The parts makers have learned that they cannot afford to take any chances. If anything goes wrong they are blamed, even if it was not their specifications that were followed. So they protect the truck maker by safeguarding themselves."

"What are the chief attributes of the ideal truck?"

"Viewed from the selling standpoint, stability and accessibility. One makes for steady operation, the other for economical maintenance.

"Your truck must stand up under all the abuse to which it is subjected—and under the best conditions that is a lot.

"But there is another thing to be taken into account. This is accessibility. It would be just as reasonable to say in advance that you were going to raise a family without any of them ever being sick as to figure on running a motor truck without something going wrong. And when that happens the "worth-while" truck is the one where the difficulty can be most easily cared for.

"Engineers are coming to realize this, but there is still so much to be accomplished in the way of 'cleaning' the jobs turned out. So much depends upon little things—the location of the carburetor, the magneto, the housing of the valves, for example, and their relative accessibility.

"I have in mind the case of a concern that sent a truck in with a leaky radiator. Now if the engineers who designed that truck overlooked anything in the way of inaccessibility I don't know where it was. I put one of our best men on the job, for it was a rush order. He had to do almost everything but take the engine apart to get the radiator off where he could handle it. Next morning the truck was turned over to its owner, but when I presented him with a bill for $6—ten hours' labor—he went straight up in the air.

"'What?' he roared. 'Six dollars for a litte bit of solder. Say, I could solder my whole store for that.'

"I went back to the office, revised my figures, and found that the charge was correct. To pacify the customer I cut the bill to $4.50—which left us no margin on labor—and explained my action to the man. It was a mistake for me to do so, because I believe that to this day he thinks I was trying to put one over on him in the first place, and that I admitted it by cutting the bill, whereas nothing was farther from my thoughts. And the whole fault lay with the engineers and the makers, who had given no thought to accessibility.

"You've got to take all those things into account in choosing the best truck to sell—and keep sold, which is one of the most important parts of the business.

"The other day a man sent in a delivery car with instructions to have it converted into a light truck. When we came to look it over we found that several new parts were needed. I called him up and he told us to go ahead and send him the bill. The parts cost $1.60, and because of the practical manner in which the car was built an amateur could have put them in place just as easily as a skilled mechanic.

"I know other machines that you could scarcely lift the hood for that sum.

"Take two trucks—I could mention names, but I'm not going to. One is overdesigned and overrefined. If you need a bolt for it you have to send to the factory or the nearest service station, because it is a special type—and the base of supplies may be half way across the country.

"With some other trucks all you have to do is spend a nickel or a dime in the nearest hardware store and get a bolt that does just as well as the original.

"These are things that the dealer is up against, and eventually the maker of the truck, for the driver of the machine quickly determines where the fault lies.

"The nearest approach to the ideal truck is the one that suits the driver and the repairman. They are the fellows that come closest to it in action and in time of trouble. If I can satisfy these two classes I never worry about the man higher up—he'll get his money's worth in service and economy of maintenance.

"Only the other day I saw a grease covered driver crawl out from under a truck, where he had been lying on his back trying to remedy a minor trouble, and explode: 'I'd like to have the blankety blank blank blank fool engineer that designed that truck here for just ten minutes.'

"'What would you do to him?' I inquired.

"'Do?' and there was a fiendish gleam in his eyes as he wiped a dirty sleeve across his forehead. 'I'd make him fix all the trouble he caused through his fool notion of putting things where they don't belong just because it required a little bit of thought to figure out how they could be located where you could get at 'em without being a professional acrobat. He'd learn more in five minutes that way than he would all his life sitting in a nice comfortable office making blueprints.'

"Of course, you will say, that driver was prejudiced. Maybe he was—but after years of study and observation I'm not sure that he wasn't at least half right.

"At all events, he's the fellow you have to suit—you can't overlook that fact. And as I said before, if you can keep the driver and the repairman sweet you're getting pretty close to the ideal truck."

Advertising appropriations bring greatest returns when expended in the CCJ